MARCH 1924 20 Cents

THE FLOWER GROWER

For all who grow flowers

ESTABLISHED 1914

Volume XI Calcium, N. Y., March 1924 Number 3

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A Pot of Tulips for Grandma

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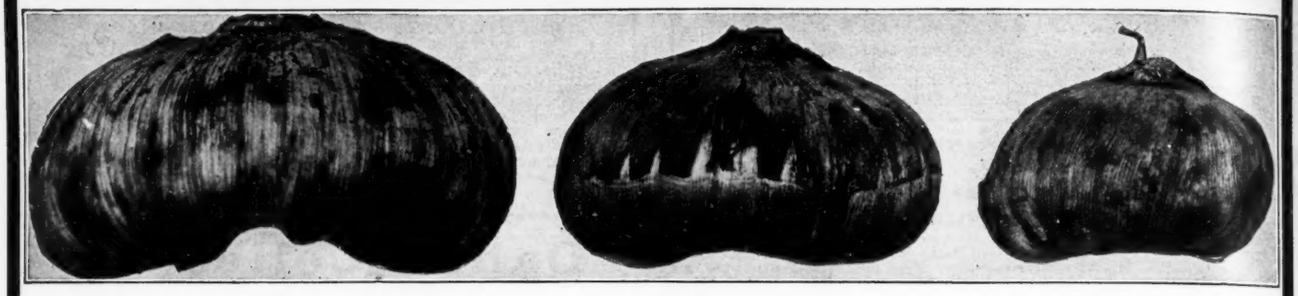

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(Photographed November 1923, Natural Size)

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Mary Alice White

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THE FLOWER GROWER

For all who grow Flowers

ESTABLISHED 1914

FOR BOTH AMATEUR AND PROFESSIONAL GROWERS OF OUTDOOR SUMMER-FLOWERING PLANTS

Entered as second-class matter March 31, 1914, at post office at Calcium, N. Y., under act of March 3, 1879.

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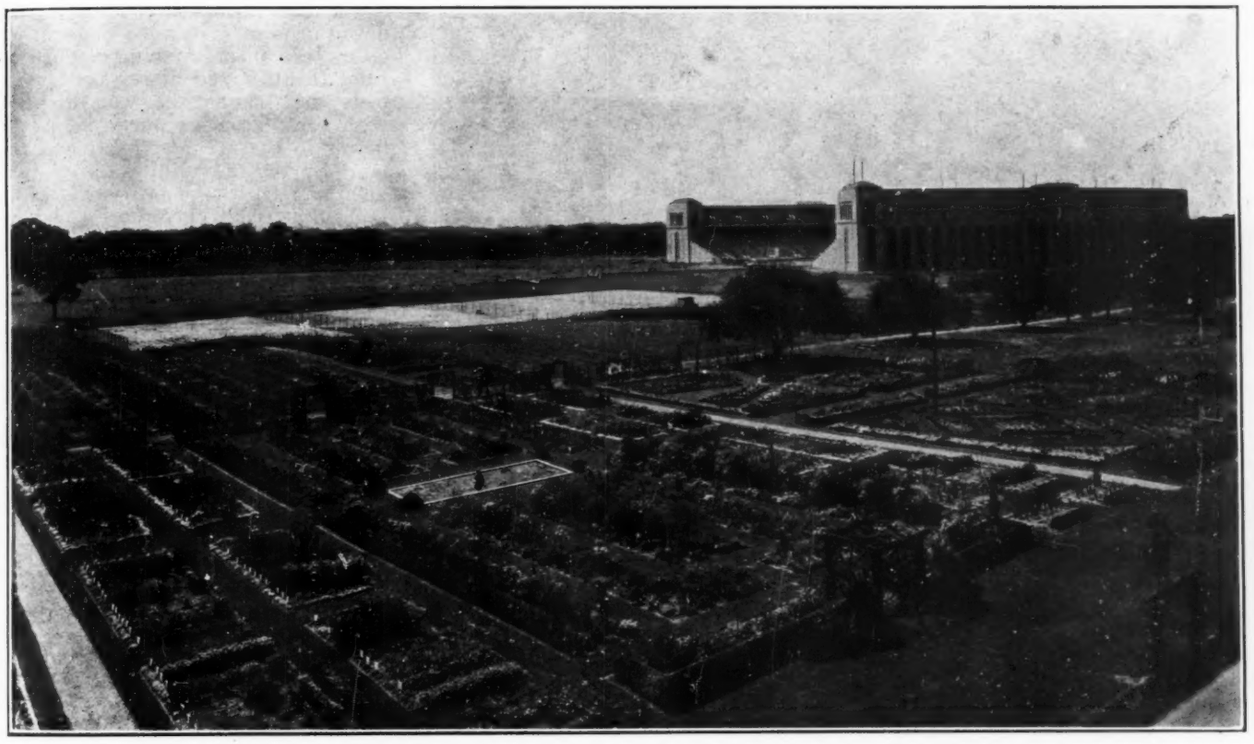
The Flower Gardens at Ohio State University

BY MISS ERLINE GREEN, a Student

I WAS tired and lonesome. There were so many people, seemingly all strangers, passing me every moment that I felt even more alone. Wearily trudging up the stairs of the Horticulture & Forestry Building to my final class of my first week at Ohio State University, I suddenly stopped by the window, when I saw a gorgeous array of color spread out before me. Overjoyed at discovering a garden where I could find beauty and companionship I drank in its loveliness until the last bell hurried me on to my class, resolving to investigate further at the first opportunity.



VIEW OF FLOWER GARDENS AT OHIO STATE UNIVERSITY, COLUMBUS, OHIO

This view was taken from the back of the Horticulture and Forestry Building, looking toward the new Ohio State University Stadium and athletic grounds, which were dedicated in the Fall of 1922.

Perennials in the left foreground with the pool in the center. Rose and annual gardens are beyond the main gravel walk through the center, with Gladioli and Dahlias in the right background.

Further development is to be made in the open spaces. To the left, beyond the rustic fence are the vegetable and herb gardens.

IMMEDIATELY afterwards I rushed down to explore my new found treasure. There I saw many familiar forms among the flowers, and others that were strange and new to me. I wandered on between the formal beds with their neat grass edges, each leading me on with some new interest. In one corner of the garden I saw a man clipping and trimming with great precision, apparently much absorbed in his work. Not yet knowing the purpose of the plot and fearing that I was breaking in upon the seclusion of someone's private garden I made inquiry of the busy man. I was delighted to learn that this was the ex-

perimental flower garden of the University and every one was welcome to wander as they liked. Later I learned that this man was Mr. Morrison, the person responsible for much of the beauty of the garden. Day in and day out, in the heat of Summer or all through the Winter, he works in the garden or in the adjoining greenhouses. With an accent acclaiming him from bonny Scotland, Mr. Morrison told me of the gardens as he hoped to develop them.

All through the Winter I watched the garden, enjoying the memory of it before the frost came with its blighting fingers. Just the pattern of the beds with some clumps of green showing through the snow was attractive and interesting. It reminded me of the beauty that was hidden there to be disclosed by the first warm days of Spring.

CEMENT POOL WITH FOUNTAIN AT OHIO STATE UNIVERSITY

Townsend Hall at the left, in background, and a corner of the Horticulture and Forestry Building shows at the right.
At each corner of the pool are Muhgo Pines. In front of pool, in the left center, is a small tree Lantana.

THE next year the garden was enlarged to almost three times its size, a rustic fence and archways with clambering Roses were built around it and a cement pool was constructed on the central axis. The garden is to be extended even farther in another year and to be connected with an informal layout of shrub, rock, aquatic and evergreen gardens.

Early in the Spring tiny shoots began to appear, later a burst of bloom of fifty varieties of Tulips, each vying with the other for your favor. Close by, following them, the Irises raised their lovely, fragrant heads, displaying all their delicate hues to delight their many lovers. Over two hundred varieties have been furnished by the Columbus Iris Society.

After the early spring flowers, the garden perennials made their showing, creating a fairyland of color with gold, light blue and pink; other colors creeping in more unnoticed. Over two hundred varieties, sponsored by the Ohio Nursery Association, can be found in the many beds, blooming from early Summer to late Fall.

Adjoining the perennial gardens is a space devoted to Roses. "For what is a garden without a Rose." About seventy varieties bloom here, some in June with all their splendor, others more timidly but more continuously, furnishing variety and interest throughout the Summer with each fresh and tender bud. The guardian of the Roses is the Columbus Horticultural Society, which meets each month.

The official experiment plots of the American Gladiolus Society are located in connection with these gardens, containing so far over a hundred and fifty varieties.

Among the later blooming flowers the Dahlias may be mentioned. There are many variations from the old type of Dahlias, about thirty kinds in all, very much improved and winning favor with the most critical.

INDEED there is so much beauty that one can spend hours and weeks and still not see it all. The garden, walled in by a vine covered trellis, is made intimate and secluded. A bit of life is added by the trickle of water from a small green fountain placed in the pool near the center of the garden. It was executed by Bruce Wilder Saville, a noted sculptor, now instructing at Ohio State University, and it was presented by the students of Landscape Architecture. The sparkle and flash of water in the sun adds something to a garden that nothing else can. The water emerges from the mouth of a dolphin tightly clasped in the arms of a small boy smiling up with roguish glee. (See Photo.) Around his upturned toes hundreds of gold fish swim, flashing in and out, furnishing pleasure for children who bring food for them to nibble. Many aquatic flowers bloom in the pool adding even more charm with their delicate colorings of soft pink, white and pale yellow. These were presented by Daniel Buskirk, a former student and a Lily specialist.

Many people wander in and around taking note of tender happenings, carrying some part of the garden away with them, but always leaving as much as before, or perhaps even more because of their presence and interest there; hence the beauty of a garden.

"All that I can see I carry off with me,
But you never miss my theft,
So much treasure have you left."

—Helen Hoyt

The Aquilegia (Columbine)

When well grown and properly cared for the several species and varieties of Aquilegias, or as they are popularly known, Columbines, are a group of highly ornamental hardy perennial plants. They combine at once flowers the most curious in form with colors the most striking and beautiful. In all mixed flower borders and beds they cannot be well dispensed with for decorative purposes, as they flower in the greatest profusion from late Spring far into the summer months. Of the many varieties, the Long Spurred Hybrids are considered to be the finest of all, as the various colored flowers, blue, white, yellow and shades of pink, white and rose, are borne on long slender stems, about two feet in height, and are of value for cut flower use and highly appreciated by all.

In cultivation, the Aquilegias should be given if possible a partially shaded situation, and a very deep moderately enriched soil, and during the winter months given a slight protection of evergreen or other branches and when this is removed in the early Spring let some well enriched compost, well rotted manure or bone meal be thoroughly dug in around the plants.

Seeds, which are freely produced, will be found to be the most satisfactory way of increasing one's supply of plants and should be sown on a nicely prepared border in a warm sheltered situation towards the end of April. Sow thinly, cover slightly, and as soon as the plants are large enough to handle, let them be transferred to another border similarly prepared, and placed in rows about an inch apart each way. When they begin to crowd each other let them be removed to another border and placed in rows about six inches apart where they can remain until removed to the rockery, mixed flower beds, or border.

CHAS. E. PARNELL

Month by Month with the Flowers
March

BY CHARLOTTE S. ALLISON, (Tennessee)

FLOWER of the month—Violet.

Poinsettia cuttings should be started in March in order to have them ready for next Winter.

The garden borders are again beautiful with the gay blossoms of the Crocus, Jonquils, Narcissi and Violets.

Start the Gloxinias into growth in this month. Pot the bulbs in fresh, rich soil; keep moist and new growth will soon appear.

Although March claims the Violet as its flower of the month, the blooming season of some of the three hundred species lasts until July.

March is the promise month;—no matter how hard the wind blows, or how low the mercury falls there is a hint of Spring in the air and gardening time is almost here.

Repot the Achimenes, water well and start into growth. When the plants are about six inches high if pinched back they will throw out many new branches. Propagation is easily made by placing stems of the leaves in sandy soil.

Many of the flower seeds can with safety be planted in the garden beds before the frost leaves the ground, thereby giving one an early start with the plant. Especially is this true with seed of the Sweet Alyssum, Delphinium, Centaurea and Calendula.

The Azaleas are making a gorgeous display of blooms at this season. After the blooming period is ended repot the plant. In doing this take off the soil on the outside of the root-ball, but do not disturb the latter. Wash and scald the flower pot before refilling.

Time to bring the potted Hydrangeas to the light. But keep them in a cool spot, else forced growth will be pale and spindling. The slow, unforced growth is needed to give sturdy, blooming specimens. If the much desired blue color is wished try planting in coal ashes with pieces of rusty iron embedded in the soil.

Do not plant the Canna seed until a small hole is filed through the hard shell to allow the moisture to enter and assist germination. Some gardeners adopt the same plan for the seeds of the White Moonflower, while others prefer to soak them in water for twenty-four hours. Both plans have their adherents. If either the Canna or Moonflower seeds are slow in making their appearance above ground, they may be dug up, examined and then replanted without damage to them.

Bring out the pot of Maidenhair Fern, that has been resting in a dry place, and divide it for resetting. This must be done before the new fronds shoot up. Use a sharp knife, cutting directly through the clump from the top down through the roots; being sure that some root is left on each section. Plant in separate pots, saturate with tepid water and keep in a warm, moist atmosphere. New growth will soon begin.

If you have never tried growing Dahlias from seed by all means do so. Seed sown this month, in the house, will make nice little plants to put out in the flower beds after all danger of frost is passed. They will produce blooms the first season and also a number of good, nice tubers for planting the next year. Best of all, Dahlias grown from seed bloom equally as soon as those grown from bulbs. This is a cheap and easy way to increase your Dahlia collection.

Start slips of Lantana, for bedding in the garden, by rooting in saucers of sand kept constantly wet and placed in full sunshine. Coleus and Geraniums may be rooted in a like manner. If you have never tried rooting Geranium cuttings in water pray do so. It is an interesting experiment and so easily done. Place Geranium cutting in a bottle of water and keep in the sunniest window. In a very short time the little thread-like roots make their appearance, and by planting time the cuttings are nice little well-rooted plants.

Cut back those over-grown Lilac bushes before the buds show any signs of bursting. Hawthorne says: "Old age is not venerable when it embodies itself in Lilacs; it seems as if such plants, as they grow only for beauty, ought to flourish only in immortal youth—or, at least to die before their sad decrepitude. There is a kind of ludicrous unfitness in the idea of a time-stricken and grandfatherly Lilac bush." Nevertheless this pruning is not necessary unless the plants show signs of losing strength.

March brings the blossoms of the Red-bud or Cercis Canadensis, and the Flowering Dogwood, conceded to be one of the most beautiful flowering trees in the world. The one bearing white blossoms is beautiful, but the variety bearing delicate pink flowers is even more beautiful. Both varieties grow wild and can easily be transplanted to the home garden. When going on woodland hikes select and mark in some way young trees the right size for transplanting. If this is done while the Dogwoods are in bloom, the white and pink kinds can easily be kept separate at planting time. Both the Red-bud and the Dogwoods make a welcome addition to the home grounds; but to be most effective they need space to show at a good advantage. If bought from a dealer such trees command fabulous prices, yet in many parts of our country they are to be had for the labor of transplanting. Philosophers declare that we appreciate only that hard to secure. If this be true we are indeed blind to the beauties spread before us.

Frost-proof Flowers

As to frost-proof flowers, I have my story to tell, too. Tulips are a favorite flower of mine, and I grow them in quantity. Sometimes by the middle of January the plants are showing three green leaves all over the field, and these leaves, of course, are frozen and thawed many times before the final opening of Spring: yet they have never seemed any the worse for the experience, beyond a slight killing of the tips of the leaves.

After the Tulips are in blossom, I have gone to the patch in the morning, and found them frozen stiff, so brittle that they would break at a touch, yet by eleven o'clock they were in perfectly good condition to pick and take to market. What is more remarkable than the fact that freezing did not hurt them, was the further fact that the quick thawing in sunshine did not hurt them either. Most things soft and tender that can stand freezing cannot stand quick thawing.

BENJAMIN C. AUTEN, (Missouri)

Wisdom of the Toad

I have around my yard about twelve toads, some of which have been there for four years. Each evening these toads come from their resting place and start out in their search of food. A description of the means by which the creature contrives to force down inconvenient forms of food, is especially amusing. When a toad, under inspection, got into his mouth part of an insect too large for his tongue to thrust down his throat, he resorted to the nearest stone and used it for a brace.

Another instance of ingenuity on the part of a toad was a little fellow's manner of disposing of an earthworm. The worm was so long that it had to be swallowed by sections. But, while one end was in the toad's stomach, the other end was coiled about his head. He waited until the worm's writhing gave him a chance, then swallowed half an inch; then taking a nip with his jaws, waited for a chance to draw in another half inch. But there were so many half inches to dispose of that at length his jaws grew tired, lost their firmness of grip, and the worm crawled out five-eighths of an inch between each half inch swallowing. The toad, perceiving this, brought his right foot to his jaws, grasping his abdomen with his foot, and, by a little effort getting hold of the worm in his stomach from the outside, he thus, by his foot held fast to what he had gained by each swallow, presently succeeded in getting the worm down.

Toads should be enticed around every garden, for they eat a great many more bugs and insects injurious to crops than one would realize. By all means, let the toad use your garden as its habitation for you will be greatly rewarded. ELMER WHITTAKER (In *Our Dumb Animals*)

The Physical Basis of Heredity*

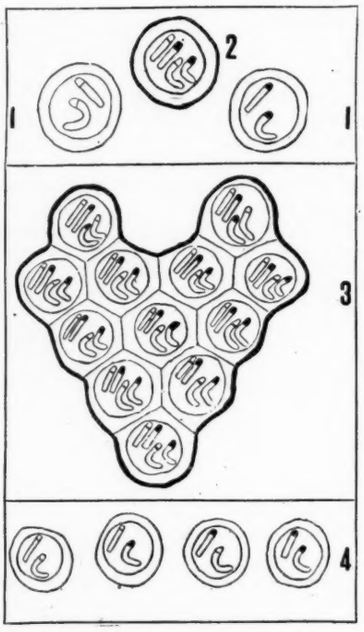
Dominant and Recessive Characteristics: How They Arise and How They Work

BY PROF. JAMES B. KELLY, Pennsylvania State College

ONE must regret the ease with which a matter-of-fact attitude is assumed toward the truly wonderful things of our environment. Lists of the leading wonders of the world will include some large heap of stones in Egypt or some mechanism for utilizing nature's forces, but will ignore such a really marvelous fact as the fact of heredity. Professor Brooks used to induce his readers to confer a proper emphasis upon heredity by having them first consider the complicated machinery of a modern steamboat and the nicety with which all parts work together for the propulsion of the whole. It is all very impressive. But then, he would add, suppose that it should be found while the boat was being studied that small bits of iron, without structure, are from time to time broken off and thrown overboard and that each of these contains within itself the power to build up all the machinery and appliances of a steamboat as perfect as the original—this would be like the phenomenon which is brought before the thoughtful in the word heredity. Every plant and every animal, including man, starts existence as a relatively simple particle—a cell—that has not even the remotest resemblance to the adult that it will produce. Nevertheless, through this reproducing particle, traits (or the factors that condition them) are carried on with remarkable certainty.

Now it is well known that the bodies of the higher plants and animals are really each a great group of cells cooperating for the benefit of the whole. The group had its beginning in the single cell already referred to as the reproducing particle. Structurally this single original cell resembles any other cell. It contains protoplasm, a white-of-egg-like substance with a machine-like structure. The portion of the mechanism of interest to students of heredity is the set of chromosomes. Chromosomes are rod-shaped or thread-like bodies, definite in number for a species and occurring in pairs. (These facts are formally pictured in the accompanying diagram.) Historically considered, however, the first cell or reproducing particle is unique, for it results from the fusion of two other cells which are known as gametes. One of the gametes, the egg, is contributed by the female, the other, by the male. Gametes carry only half as many chromosomes as other cells of the species, and it is their fusion in the act of fertilization that establishes the paired-up condition of the chromosomes just spoken of. (See diagram, figures 1 and 2.) The paired condition is remarkably maintained following fertilization in the cell multiplication that builds up the organism. Only at its maturity do cells appear again carrying the reduced (half) number of chromosomes. (Diagram, figure 4.)

It has long been known, among beekeepers at least, that the male bee or drone results from an unfertilized egg. In other words, the whole body of a drone is built of cells holding only the half number of chromosomes as is characteristic of gametes. A fact like this indicates that one set of chromosomes may contain all that is needful in order that an adult body be formed. In general, however, the cells of a plant or animal body possess the double number of chromosomes whether they all be necessary or not.

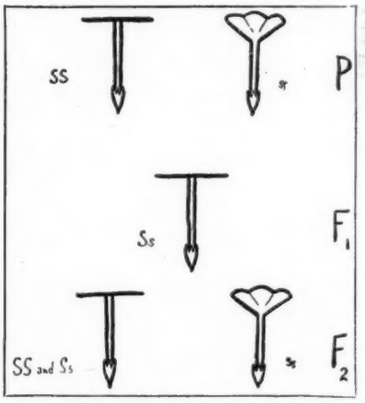


THE PHYSICAL MECHANISM OF REPRODUCTION AND HEREDITY

Fig. 1: The two gametic cells, one male and one female, two chromosomes being represented in each. Fig. 2: With fertilization the two gametes unite to form a single cell, the fertilized egg. Fig. 3: The fertilized egg divides, as do its progeny again and again, until there comes into being a large group of cells, the body of the adult organism. In all these cells the chromosomes remain in duplicate. Fig. 4: In the sexual glands or in the spores, cells arise containing again but half the number of chromosomes. (Adapted from Genung)

At this point it may be asked why a reader interested in heredity should be burdened with facts concerning chromosomes. The reason is this: a great body of genetical facts accumulated during the last two decades indicates that hereditary traits are conditioned by very small particles called genes or factors, and that these genes or factors *are carried by the chromosomes* in some sort of serial order. As the chromosomes go, so go the contained genes, and one must be acquainted with the maneuvers of chromosomes in order to possess a philosophic conception of heredity.

Since the chromosomes are in duplicate, the factors they carry are in similar condition, one of each pair of factors being contributed by the male parent, the other by the female. When we are dealing with purebred organisms the factors derived from the father are similar to those from the mother, and this prohibits us from, say, determining the relative importance of the paternal contribution and from tracing it through the children, grandchildren and subsequent generations. This is the reason why resort is had to hybridization, for when the parents differ in one or more respects it is a simple matter to follow through in the progeny what each has presented at fertilization. To make this matter concrete let us consider certain forms of the common annual Phlox. Most varieties possess flowers which are salver-shaped; that is, each flower has the outer blade at right angles to the tube which supports the blade. (Lower diagrams.) A few strains are characterized by flowers which in full bloom are funnel-shaped. Suppose these two kinds are crossed, which can be done by taking the pollen of the funnel variety and depositing it on the stigmas of the salver. The children from such a mating—the first hybrid or F_1 generation—always look just like the salver-flowered parent, and there is no visible evidence of the funnel condition. The salver shape is labeled a dominant, the other, as a recessive, trait. Continuing such an experiment two of the F_1 salver-flowered plants are mated and give rise to a group of grandchildren called the second hybrid or F_2 generation. This group is not uniform, but is made up of 75 per cent salver-flowered *and 25 per cent funnel-flowered* individuals. The recessive trait reappears with all its original distinctness. These facts are summed up in the diagram. The F_2 ratio has received a perfect interpretation on the basis of chromosome behavior. We may picture in the cells of the original salver parent one pair of chromosomes carrying a pair of factors determining the salver shape. Let us represent the condition by *SS*, where *S* stands for the gene conditioning the salver-shape. Its reproductive cells, of course, contain but a single *S* each. In the corresponding chromosomes of the funnel strain a different pair of factors, *ss*, are assumed, which, when present in double dose, make for the funnel shape. The gametes of the latter strain



A TYPICAL CHAIN OF PLANT HEREDITY

Upper line shows diagrammatically salver-shaped flower on left, funnel-shaped on right. When crossed, they produce salver-shaped offspring, as in the second line. In the third row we have the assorted second generation that springs from parents of the F_1 type.

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hold, each, only a single *s*. The crossing gives all the cells of the children (F_1) the composition *Ss*, and the gene *S* alone determines the form of the flower. These children will have, of course, gametes with the reduced number of chromosomes, and hence of factors. One-half of the F_1 gametes will carry *S* and the other half *s*. In originating the F_2 generation —the grandchildren—by the mating of two F_1 individuals we really mix together for fertilization a lot of eggs, half carrying *S* and half *s*, with a lot of male gametes, likewise half with *S* and half with *s*. Unions based merely on chance will give *SS*, *Ss*, *sS*, *ss* with equal frequency. Only the *ss* combination will lead to a funnel-flowered plant, and, as is evident, this will occur on the average only once in every four fertilizations. It is to be emphasized, by the way, that the figures "one in four," etc., given in this and other articles on heredity, are strictly averages, and are not to be interpreted as meaning that, if four offspring are produced, one will inevitably be of the character specified.

A number of comments may be made on the preceding simple case in the Phloxes. The funnel characteristic is one that shows in the parents, becomes latent in the children thus skipping this generation, and r appears among the grandchildren. Those grandchildren exhibiting it would be atavistic. The atavistic or recessive character is constant from the time of its reappearance and does not need to be "fixed" by further generations of inbreeding. The potency of the factor for the funnel-shape has not been altered by hybrid association with a different sort of mate. In fact, there seems to be no known sort of influence that may be employed to change the nature of a factor. Henry Fairfield Osborn has recently stated that factors are the most stable things that he knows of in the realm of biology. The chief of the Mendelian principles is this one concerning the association without contamination or change of pairs of factors in the body cells and of their pure segregation from each other when gametes are formed. The three to one ratio among the grandchildren is dependent upon this hypothesis. It is also evident that there are two distinct types of the dominant characteristic, *i. e.*, the pure-breeding and the hybrid, distinguishable by the progeny they give. The hybrid dominant carries along the recessive trait and gives no evidence of it on mere inspection. Feeble-mindedness in man, one kind at least, is a recessive characteristic, and this accounts for a feeble-minded child occasionally arising from two normal parents. The blue-eyed condition is similar and may appear among the progeny of brown-eyed parents.

Thus far our discussion of hybridization has dealt with cases in which the parent plants or animals differed in one pair of characters only. We advance a step in complexity when we consider what follows when forms are mated which are distinguishable in respect to two pairs of traits. To revert to the Phloxes, let us suppose that a strain having flowers salver-shaped and colored is crossed to one whose flowers are funnel-shaped and white. The immediate progeny from such a mating is uniform and exhibits the dominant traits, color and the salver shape. The generation of the grandchildren, derived as in the simple Phlox case, is a mixture. However, sixteen individuals there are *on the average*

9 colored and salver-shaped,
3 colored and funnel-shaped,
3 white and salver-shaped, and
1 white and funnel-shaped.

As an aid in visualizing the processes that underly this ratio, let us refer again to the diagram. Each of the chromosomes in the male gamete has a black mark in it. Suppose the dot in the straight chromosome is the gene determining salver shape and the dot in the curved chromosome is the gene for colored flowers. The homologous chromosomes in the female gamete are shown without marks in the corresponding places or "loci." This signifies that they are carrying the recessive genes conditioning funnel shape and non-colored flowers, respectively. (See Figure 1 in the diagram.) Fertilization gives a cell (Figure 2 of diagram) hybrid in respect to two pairs of characters. The adult built up (Figure 3 of diagram) forms colored salver-shaped flowers and does not betray the latent genes for white and funnel shape carried in its constitution. With the formation of gametes by the adult (Figure 4, diagram) the usual reduction in chromosomes occurs. It is important to note that while rod chromosome always separates from rod chromosome (the two entering different gametes) and likewise curved chromosome separates from curved, it seems to be a matter of indifference whether the black-dotted rod passes into a gamete with the black-dotted or the non-dotted chromosome.

The same holds good for the non-dotted rod. Accordingly four kinds of gametes are possible. (Figure 4 of diagram), and the first hybrid generation forms these in equal numbers. Now suppose a lot of eggs of these four sorts are mixed with a lot of male gametes of the same sorts and the unions are left to chance. The laws of probability will lead us to the four combinations already mentioned as found among the grandchildren and in the stated proportions.

The second of the chief Mendelian principles is exemplified in this more complex Phlox example, *i. e.*, the principle of the independent reassortment of traits or of the genes that condition them. If the colored salver-flowered strain and the white funnel-flowered strain were the only kinds of Phlox in existence, then our crossing would have enabled us to secure two entirely new creations, namely, colored funnel-shaped flowers and white salver-shaped. All organisms may be viewed as a collection of traits (dependent on a collection of genes in the chromosomes) dissociable at time of gamete formation and capable of being put together into new combinations at times of fertilization. It is this principle which caused the botanist Baur to boast that with a little time he could make Snapdragons to order.

A large part of the success of Luther Burbank is dependent on securing new combinations of characters resulting from hybridizations. There are limitations or refinements to the principle of reassortment, but these are nicely interpretable in terms of chromosome behavior.

Optimum Temperatures for Flower Seed Germination

IN AN interesting article in the *Botanical Gazette* for December, 1921, G. T. Harrington presents the results of experiments made to determine the optimum temperatures for flower seed germination. In conclusion the author says it is evident that the use of warm temperatures usually increases the rapidity of germination of the species investigated, but that comparatively low temperatures are more favorable for completeness of germination. In conducting germination tests of each species, a temperature should be used which is warm enough to accelerate the progress of germination as much as can safely be done. At the same time, it should not be warm enough to prevent the germination of any viable seeds, or to encourage more than is necessary the development of microorganisms.

When the germination temperature is too warm, frequently the germinated seeds make but little growth, and it is impossible to judge the comparative vigor of different lots of seeds. Sometimes weak seeds of little value will germinate when a warm temperature is used, and will then appear to as good advantage as other strong, vigorous seeds. If the germination tests are made with a more favorable temperature, both the strong and the weak seeds will germinate, but in this case the difference will be obvious at once. In this case some seedlings make rapid growth and are normal in appearance, while others have a watery, translucent appearance, grow very slowly, and sometimes have begun to decay before emerging from the seed coat. On the other hand, too cool a temperature decreases the germination, increases the time required, increases also the difference in time required by different lots of seeds of the same species, and thus makes uniform procedure with the different lots impossible.

In conducting germination tests of some seeds, considerable latitude is permissible in deciding upon the temperature to be used. With certain other kinds, as Larkspur, the temperature requirements for completeness and rapidity of germination fall within narrow limits.

The substratum should be such as to furnish abundant water to the germinating seeds without limiting the supply of oxygen. For this purpose folded blotting paper well moistened with water is favorable. Most seeds of medium size can safely be tested between folds of blotting paper. Very small seeds do not hold the separate folds of the blotting paper apart so as to allow circulation of air between them. To insure a sufficient supply of oxygen, such seeds should be tested on top of the moist blotting paper Candytuft seeds were tested on top of the blotting paper, not because of their size, but because of their mucilaginous covering, which softens when the seeds are wet and sticks the seeds insecurely to both the upper and lower layers of the blotting paper, thus increasing the danger of loss or displacement of the seeds when the blotters are opened to count the germinated seeds. Pansy seeds have a mucilaginous covering similar to the covering of Candytuft seeds and may well be tested on top of blotting paper, instead of between blotters as in this investigation. Large seeds, such as Sweet Pea and Nasturtium, should be tested between folds of moist canton flannel or other similar material, instead of in moist blotting paper, because the cloth folds around each seed and supplies moisture to a larger portion of its surface than the blotting paper does.

Our Birds

The Wonderful Work of Feathered Architects

BY T. SHEWARD

NATURAL History gives many instances of wonderful birds' nests, planned by feathered architects. Many of these are built in curious places to escape enemies, while others are constructed with great skill, and wonderful instinct, to satisfy the artistic taste of their owners.

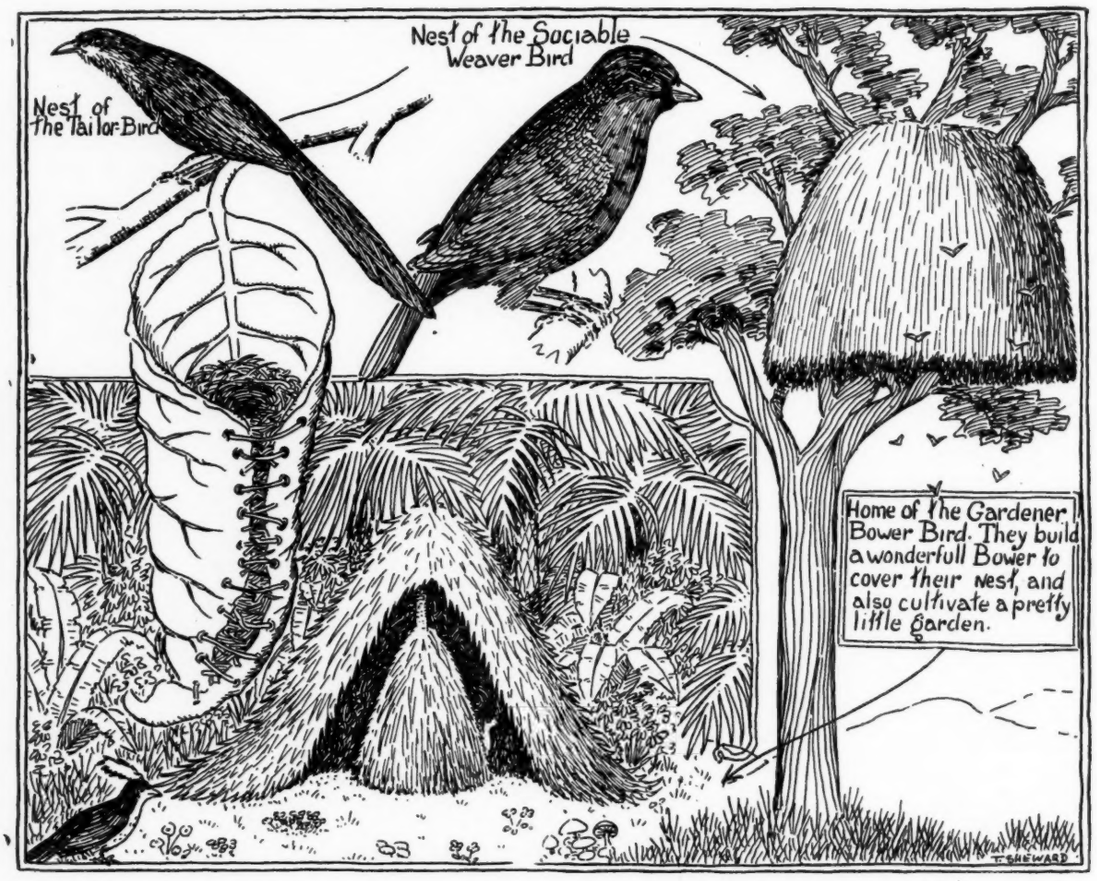
The nest of the little Tailor-bird, of the Indian Archipelago is remarkable for the ingenious way in which it is built between two leaves, the edges of which are sewn together with vegetable fibre, forming a pocket in which the nest is built. Sometimes one large leaf is used, and as these are always at the extremity of slender twigs, the nest is quite safe from Monkeys, Snakes, or other enemies.

THERE is a variety of Stork found in Madagascar, which builds a huge nest of sticks, and has quite a modern residence. There is a bedroom, a playroom, and a living-room; all neatly plastered with mud, inside, and ornamented with many pretty stones.

A variety of Tit in East Africa, builds round nests of moss and wool, like a large ball, at the end of slender branches, and these have a door which can be closed to keep out intruders when the family retire for the night.

Another remarkable nest is that of the Sociable Weaver Bird. These birds live together in large colonies, build huge apartment houses, and each pair have their own separate rooms. They are found in several parts of Africa, and their nests are so large that they always attract the attention of travelers, being noticeable for miles. They are carefully thatched to keep out the rain, and all the entrances are from below, the apartments being arranged in layers, from top to bottom and connected by shafts. All the birds work together to keep their huge nest in repair, and to expel their enemies.

THE most wonderful nests so far discovered are those of the Bower Birds, of Australia and New Guinea. There are several species of these birds and they all make remarkable nests. But the home of the Gardener Bower Birds is little short of being one of the wonders of the world. They build their nests under a small tree, covering them with a hut of moss and reeds, then build a bower over this, and cover it with living plants for decoration. In front of the nest they make a pretty little garden, first clearing away all grass and stone, then forming a lawn of living moss, brought to the spot, and planted, and on this they set bright colored flowers, fruit, and Fungi, removing them as they fade, and replacing them with fresh ones. The home of the Gardener Bower Bird is in Northwest New Guinea, and the nests are so carefully hidden in the great forests, that they are rarely seen by white explorers.


Nest of the Sociable Weaver Bird
Nest of the Tailor-Bird
Home of the Gardener Bower Bird. They build a wonderfull Bower to cover their nest, and also cultivate a pretty little garden.
T. SHEWARD

The Killdeer

That killdeer story from *Bird Lore* (January FLOWER GROWER) strikes me crosswise. I have spent more than sixty years with the killdeer-killdeer-killdeer-killdeer, as they breed on my farm in considerable numbers, and always being interested in bird and wild life habits I have observed them rather closely, and note that the behavior of these Crawford Co. birds and those on my York Co. farm are indeed different. I often had two families in one field and never would they go together before they could fly, and then I could not tell. While it is

true that they run very rapidly and stop very suddenly, that is characteristic of the Plovers. Two eggs is the rule but on a few occasions I found three little birds in the group. I never saw three eggs in the nest, which is really no nest at all.

But it is the *drilling* on which I wish to put my "reservations." Never in all the years that I observed, has anything that would point to such a possibility been observed. The fact is the baby birds are very awkward, though they can run fast, but they do not have the hiding instinct of the Partridge, which is also a very fast runner. The old bird makes a great ado and "makes-believe" she has a broken wing and cannot fly, while the little ones make their getaway to another part of the field, while the old bird tries to lead you in the opposite direction. My observation of the young Killdeer leads me to put it into the awkward squad rather than into the crack squad. But I am not at all ready to say what the *Bird Lore* reporter gives us is not true, but it is utterly different from all my observations.

L. W. LIGHTY

A Partridge Risks Her Life

M. J. PHILLIPS, (In *Our Dumb Animals*)

I JUMPED, because right from under my feet a little brown Partridge that had been sitting on her nest hidden close under the side of a big log, in a pile of dead leaves, dashed away from fright, making a loud noise most unexpectedly. She had heard me coming when I was several hundred feet away, and had watched me, keeping very quiet, doubtless hoping that I would go by on the other side of the log.

There were twelve little Partridges cuddled up snugly under her wings, and she was anxious that no harm should come to them, just as any other mother would be. She even might have considered remaining very still if I had gone by on her side of the log in case I was six feet or so away, because Nature had given her brown feathers very much the same shade of color as that of the dead leaves and old log, in order that she might more easily escape discovery when either on or near her nest. Knowing this fact, she perhaps did not intend to race away unless it became absolutely necessary.

But my big army shoes were tramping heavily as I came on right towards her. Her heart must have been beating loud, because she could easily have escaped since she saw me when I was still a long distance away, but what was she to do with her babies? She couldn't pick them up and run, and she was too loyal to run and leave them in danger.

She waited until I was about to step on her before she moved. In the meantime, in some manner she explained the danger to her little brood and instructed them what to do in case she had to leave them. Then, just as I was about to step on her, with a loud flapping of wings, she pretended to fly away, but so slowly that I raced after her, which was just what she wanted me to do. In that way, she was leading me away from her babies and giving them time to hunt hiding-places. I raced on, thinking I might catch her, but in a moment she knew that her little Partridges were in all probability safely hidden, and flew away from me easily.

She, however, had risked her own life in order to save them, because she did not know whether I was the kind of man who always carried a gun when in the woods and shot at every little wild thing I might see, which I could easily have done in her case, since she flew so slowly at first.

When she was getting away from me rapidly, I thought of the little Partridges which I was certain were in the nest, since it was the time of the year when Partridge babies were to be found if one had sharp eyes, and raced back, but the nest was empty. There were broken pieces of egg shells close by, which were telltales. I decided that there were little Partridges hidden under leaves and pieces of bark, even in grasses partly covered with dead leaves close by. I knew they were very young because the broken shells looked as if they might have been pushed out of the nest that very day.

After a few moments of very careful looking, I found one little fellow partly hidden under a big dead oak leaf, with his bill pushed down into the soft forest soil. He was as still as could be. He didn't make a move for fear he would attract my attention. I picked him up tenderly, looked at him just a moment, then put him down gently because I could feel his heart beating, and knew that he was badly frightened, and slipped away, being very careful where I stepped for fear I might put my heavy shoe down on one.

I knew his mother was not far away; that she was at that very moment watching and listening from somewhere, and that she would come back as soon as I had gone and call softly. I wanted to hide somewhere and watch her, but she would have seen me and would not have come back.

However, after she had called a time or two, first one came out of hiding, then another and another, until all had come. She clucked soothingly and they understood that she would spread her wings and keep them warm until they were over their scare, but one of them had something strange about it. She put her head down and smelled around it; then pecked at it, a most unusual thing for this little loving Partridge mother to do, as much as to say, "I don't want you; go away," and she actually pushed it away with her bill, as if punishing it for something. It sat off to the side alone until the wind had blown away a peculiar smell about it that she could not understand, but feared very much.

When the human hand had stroked it, the odor of perspiration clung to it, and she, like other wild things, had learned to fear very greatly the odor of human perspiration that by sad experience was associated with the frightful noises of guns and sufferings from wounds and death when shot at. She had never suffered in this manner directly, but somehow understood from other Partridges, including her mother, that it

(Concluded on page 122)

The Glad Philosopher's Musings

I SUPPOSE it must be because as we grow older in years we are more inclined to temper justice with mercy that we are more lenient in our attitude to the infractions of our grandchildren than we were to those of our own. When my little two and a half year old grandson came toddling up to me with his arms full of labels he had just pulled out from where I had set a row of fancy Dahlias, I smilingly let it go as a good joke on grandfather, but if his daddy had done the same trick some thirty years before, little Willie would have been very likely to have had his breeches dusted, if for no other reason than to appease father's wrath.

I wouldn't be surprised that if the truth could be known, on more than just a few occasions the baffling mystery of some unfortunate mixture of varieties might be traced to the day that some fond, ambitious young hopeful had insisted on helping daddy or grandpa.

What pity that this feverish ambition that little children have to help "daddy" or "muzzer" cannot be conserved until the help would be really helpful.

All parents, whether they realize it or not, have a responsibility to teach their children to consider work as a pleasurable and beneficial occupation, and that it is reprehensibly dishonorable to be a shirker.

I cannot help feeling especially sorry for the pampered, frivolous, idle daughter of the family who has been raised by a misguided, over-indulgent mother to be a hindrance instead of a help in the household economy.

The young of today are fortunate because they live in an age when the spirit of athletics enters so strongly into school and college life. Athletics tend to make a boy strong, manly, courageous and gallant. How it swells father's heart when sonny has played brilliantly on the winning football team; and mother begins to think that sports are not so brutal and dangerous after all; and sister,—well, sister, of course, is always sympathetically enthusiastic.

In a certain town in a certain state, there resides a certain family, all the members of which are justly proud of the athletic achievements of the two boys in the home circle who attend High School and who are really the backbone of both the football eleven and the basketball team. Now, with two such strong, athletic young men in the family you wouldn't think their mother would have to work the garden in Summer and shovel the snow from the sidewalk in Winter, would you? Well, she does not. Perish the thought—she doesn't have to, of course. Grandmother does it!

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" Wherefore by their fruits ye shall know them."—JESUS

" He who sows the ground with care and diligence acquires a greater stock of religious merit than he could gain by the repetition of ten thousand prayers."—ZOROASTER

Depopulation of the Country

ACCORDING to a recent article in *The Electrical World* the electrical interests of the country are worried over the fact that people from the rural districts are flocking into the cities and towns. The electrical folks are worried about it because a concentration of population is least advantageous to the development of profitable electrical service.

The trend of population cityward is shown in the article referred to by a drawing or map indicating certain areas where the population is decreasing, (88.2%); other territory where the population is stationary, (5.7%); and still other territory where the population is increasing, (6.1%). The population is increasing in the city districts and manufacturing territories, and it is especially interesting to the Editor, that the Black River Valley, where THE FLOWER GROWER is printed and published, is in the territory where the population is increasing, while territories immediately adjacent thereto show a stationary trend. But at the same time it must be noted that the greater part of Northern New York shows a decreasing population. In other words, the contrast right here at home is decidedly noticeable.

THE tendency of the times is surely toward concentration and specialization. How long this tendency will continue is difficult to suggest; but it will surely obtain while people demand greater and greater quantities of manufactured products, and while the greater part of the efforts of the people is being expended in their production. The actual necessities of life require a decreasingly and relatively small part of the productive effort of the community, and the greater effort is now given up to the so-called luxuries, including automobiles as a chief factor.

While we deplore the trend of population cityward, there is absolutely no stopping it until a balance is struck. As long as the average person can make a living with less work in the city;—or to put it another way, as long as the average person can get higher wages in the city;—he will go there. When the production of manufactured goods catches up with the demand and perhaps passes it, then and only then will the depletion of country population be stopped.

However, there is a ray of light in the situation which indicates that production of manufactured products of the future may not necessarily be in constricted areas. It is a fact that may people prefer to live in rural situations if they are able to get the same comforts and facilities that they can get in the cities. It has been shown also that operating costs of manufacturing units are less in rural locations. When a satisfactory combination of these two elements has been worked out it may result in a decided check of the movement cityward, and dare we hope, a reverse movement.

And the electrical interests, which we started in to talk about, are greatly interested in rural development. They are attempting to show manufacturers the undoubted advantages of rural locations. Let us hope they may succeed.

MADISON COOPER

The Road to Faith

A hundred yards away, the second mother bear took the warning. In a very short time, they had all disappeared over the cap of the ridge. I had not shown myself. I had made no sound. The wind was still in my favor. Yet the frightened cub had given warning to them all. For no other creature but man would they have fled like that. Even in the face of a pack of wolves, the mothers would have turned to fight. Something had told them that man was near—yet only the cub had seen and smelled that man, and he had probably never seen or smelled another. Yet he knew, and all the others knew, that man was the deadliest of all enemies. And I am half convinced, as I write this, that nature has at least the beginning of a universal language, that the centuries and hundreds of centuries have given it four words, and these words are: "Man is our enemy."

This fancy makes one wonder why man is so jealous of himself. The Supreme Power is immeasurable, he tells himself. It has no such a thing as limitation. Heaven, no matter in what form he may conceive it, is utterly boundless. Yet he is jealous of it. He does not want to concede that any other life will form a part of it but that of his own breed. He has tried, through unnumbered centuries, to fool himself into the belief that he is the one and the only thing in all creation upon which the Ruling Power of the universe has its guardian eye. He has tried to make himself believe that he is the one toad in the huge puddle of life. He has not conceded that an all-powerful but tender God might love flowers and birds and trees and many other living things as well as he loves man. And as I sit here under my Spruce trees again, it seems to me that, just because he has been so near-sighted, man has not yet found a faith which is all-comforting and of which he is utterly sure.

As he comes to understand more and more how imperfect a thing he is, the more unstable his faith becomes; and the sacrilegious thought comes to him, unconsciously but with terrific force: "If I am the chosen handiwork of God, then I can have no very great faith in the judgment and workmanship of God."

And as the suspicion grows upon him that he may not be the "one and only" child of God, he cries out wildly in these modern days for evidence. He tries to bring spirits back from the dead that they may offer him some proof. He quests vainly for "revelations" that may satisfy him. He says with his mouth, "Yes; I believe absolutely in God," yet, in his heart, he knows that he is half lying,—because of fear of what his neighbor will think if he speaks the truth. He wants to believe there is a God. He wants to know there is a God. Yet he is afraid.

And, personally, I am glad that the time has come when he is afraid. I think it is the real beginning of his salvation and the dropping-away of his egoism. Today he is beginning to see all life as he did not see it yesterday. And tomorrow his eyes will be wide open.—James Oliver Curwood. (In *Izaak Walton League Monthly*)

The Balanced Viewpoint in Tree Planting

WHILE it is not the wish of the Editor to criticise nor limit the activities of the campaign for tree planting, which has for its slogan, "Plan to plant another tree," yet in conjunction with what J. B. Spencer says in another column, the Editor wishes to add a voice in favor of *judicious* tree planting.

In these days of the slaughter of forests it is surely desirable to stimulate an interest in tree planting, but like other good things tree planting can easily be overdone when handled by persons unfamiliar with its theories and practical aspects. Tree planting as a forestry proposition is also quite different from the planting of ornamental trees in the front yards of homes and along streets and avenues. Few persons, indeed, have sufficient imagination, as suggested by Mr. Spencer, to know how to plant trees, and in nine cases out of ten, trees are planted too closely. Any person experienced in horticulture understands that one cannot have many and large shade trees, and grass, flowers and shrubbery at the same time. A large shade tree is a voracious feeder and demands practically all of the fertility within reach of its roots, which are commonly understood to occupy as much area as the limbs or top.

LARGE shade trees are often seen growing very close to houses. They are out of place when so located. Shade is all right enough to keep off hot sunshine, but it is generally better to permit the sunshine to come in, rather than provide shade. Sunshine is purifying and too much shade is the reverse.

The thinning out of the superfluous street trees in the villages, towns and cities, and the education of the public respecting the principles of correct street tree planting, should be regarded as street and civic matters rather than be left to the discretion of the property owners. The Editor will welcome accounts of how desirable reforms in this direction have been inaugurated or accomplished anywhere in the United States or Canada.

When a tree is once planted and established it takes a man of rare courage to fell it. Much sentiment is attached to trees, especially old trees, and too much forethought and consideration cannot be given to variety and location of tree planting when planning for shade or ornamental purposes.

By all means let us have a sane and balanced viewpoint in connection with tree planting. It is easy, indeed, to overdo a good thing.

MADISON COOPER

Price Fixing and Price Cutting

ONE of the great problems that confronts the Gladiolus grower who wishes to sell bulbs is the fixing of proper prices. There are four main items in the adjustment of a correct price. They are the original cost, production cost, selling cost, and profit.

When the behavior of a variety as to increase and growth is known, the problem is one of mathematics. There are those, however, who insist that it is an ethical problem and that the originator or introducer should be allowed to set the price for a number of years, other dealers conforming thereto. This does not appeal to me as a logical position. All other things being equal the bulk of the trade would go to the originator under this system. New varieties of promise are usually introduced at a high price. There are comparatively few people in this country who can afford to pay from $1.00 to $50.00 for a Gladiolus bulb simply to enjoy the bloom. At such prices a new variety will remain only a name or something seen at a show to the vast majority of growers.

A high introductory price presupposes financial profit for the purchaser. To secure this profit, demand must be stimulated by price reduction, for the originator fixed a price where he considered supply and demand would be in equilibrium. Experience teaches us that a good variety will finally be reduced in price until bare production costs are reached. How much more sensible it would be for the originator or introducer to reduce the price gradually, year by year, instead of holding it nearly stationary for a number of years until everybody markets accumulated stocks at once, resulting in a grand crash of prices.

"The Gladiolus," by M. Crawford and Dr. W. Van Fleet (1911), says that *May* and *Augusta* are in such demand that the supply is likely to be inadequate for some time. *America* and *Princeps* (Van Fleet) are mentioned as being new and high priced. *America* is the only variety mentioned that has any commercial importance today. Every variety has its face set toward the discard from the moment it is introduced.

The grower who by skill or climatic situation is able to propagate and market new varieties at reduced prices is rendering a real service to the trade. New varieties that are superior and reasonably priced stimulate trade in any line. Price reduction even to the extent where it might be called price cutting has the approval of nearly everyone who wishes to buy the particular variety involved. It is only those on the selling side who view the situation with alarm.

An originator or introducer begins to lose price control of a variety with the sale of the first bulb. The original cost becomes a decreasing factor in price making as time increases and stocks multiply. It, therefore, follows that after enough time has elapsed the original cost of a $5.00 bulb would affect the selling price of the stock propagated therefrom, less than one cent per bulb.

When this principle is understood originators will arrange to take their profits in the early years of introduction, reducing prices each year until they too can share in the profits from volume sales at commercial prices.

ARTHUR C. PERRIN

Vases for Flowers

LOOK at cuts as run in THE FLOWER GROWER and is it not a fact that in most cases the flowers are poorly shown? Vases are too short for the floor; too high for table; too tottery for low stand. Shape is often anything but pleasing and colors fierce.

After long and careful seeking I have found but three patterns that to my mind give promise of filling the bill. Made in three sizes; twenty inches high for floor display, twelve inches for spikes half bloomed out, and six inches for the unfinished tips, clear smooth crystal glass, enlarged bulb at base to hold plenty of water and not topple over, neck gradually expanding to a top diameter of about three inches, top with roll or collar, smooth even rim to show least break between the vase and flower stems. Makers of such vases are hidden in the woods. Maybe you can coax them out. We need them and they need us and I fancy if we could get together each would call the other blessed.

Growing flowers is one thing,—properly displaying them another. I have been of the belief that the Lord knew how much stem to give to a plant as well as he knew how much tail to give to a dog, and have never believed in unduly shortening either of them. I want to admire my bouquet very much as I would enjoy looking at

the flowers growing in their natural way. If Pansies, I want them on a low stool, or if you please, even on the floor. If Dahlias or Wistaria then I want them up on the mantel shelf or even higher. The less conspicuous the container the better.

The length of the flower stem determines much. How much we differ on that point! I have cut long stems with my Peony blooms; sacrificed foliage with a sinking heart in order that the flowers be what they should be, and then be rewarded by having the recipient of same give the stems a twist, break them off close up to the blooms and thoughtlessly cast the ends at my feet thinking all the while that they know just how to fix posies. Did I resent it? I surely did, and my wife, Mrs. True like, is the only person who can silence me on such occasions.

Wanted once to make a pleasing gift of *Niagara* blooms. This variety was then new and greatly admired. I cut the stems off close to the ground sacrificing the bulbs in order to have sufficient stem to properly display the immense heads of bloom. I carried them with the care fitting a baby, so anxious was I that the blossoms be unbroken. Was met at the door by one who knew just how to arrange flowers. Hardly were we comfortably seated when a peculiar grating sound met our ears,—a sound much like the severing of fish heads. We knew what it meant and soon had the sensation of seeing our flowers brought in decapitated, and like the head of John the Baptist, put on display. I lived through it, but that very night solemnly promised myself that if ever again I went to the trouble of giving unusual flowers, I would also see to it that they were properly vased.

JOHN H. NEELEY

Street Trees in Relation to Horticulture

TREES and horticulture are inseparable. No space need be used in arguing this point. Much argument and much demonstration, on the other hand, appear to be necessary to give to the average man a realization of the handicap that too many trees bring to the horticulturist. It has been the rule of municipal government, whether in village, town or city, to allow property owners individually to control and do the planting of street trees. A want of imagination together with the habit of copying others, has led to too close planting. One cannot help learning in his home town or in any other that he may visit, that the planting habit has been about the same. From fifteen to twenty-five feet covers the distance between street trees. The intentions of those who have given it thought to remove every second tree later on, is very rarely carried out, with the one result that it is practically impossible in the larger urban districts to do any ornamental planting in the front part of their properties. The public appears to accept the situation without protest, and if it is proposed by a municipality to take action in thinning out the trees, a strong protest is liable to be made by those who feel they have a right to control the trees in front of their property.

ABOUT five years ago a small committee in Ottawa, the capital city of Canada, undertook the inauguration of a campaign to bring about a reform in street tree planting. The movement received the very heartiest support from practically all of the larger organizations in the city; including the Board of Trade, the Rotary and Kiwanis Clubs, the Board of Education, and the City Council itself. A strong committee was appointed at the time and has been constantly active, but it has taken until a few months ago (more than four years) to get a new by-law covering the matter passed by the City Council. This by-law provides for the appointment of a tree inspector who is given authority to control all of the street tree planting. Trees of the forbidden species are enumerated, and the minimum distance established for planting is set at thirty feet. It is further required that when planting a street, one species shall be adhered to; or where supplementary planting is done, the trees that shall be put in must correspond with the majority of those already on the ground, if they are of desirable species.

The inspector is empowered to remove decayed or dangerous trees, or any others that in his judgment should be removed, the latter after giving forty-eight hours' notice to the occupant of the property adjoining.

HORTICULTURISTS at Ottawa are looking forward with great relief to the administration of this new measure, for they see in it an opportunity to add greatly to the beauty of their homes, as well as to the city as a whole, by making it possible to beautify their lawns with some hope of success.

Viewing the question from a national standpoint, I can think of no service that could be better undertaken than a campaign of education by the horticultural papers of the country. THE FLOWER GROWER is doing more for horticulture than perhaps its Editor realizes. If it can bring its readers to fully understand the advantages of reducing street trees to the point of letting in the sun, it will have commenced a movement that should in a few years add greatly to the beauty of our urban vicinities, so desirable in these days when the public is passing through on motoring tours. Nothing that I can think of will advance more the interests of horticulture in a town, and by so doing secure the admiration of both the residents and visitors, than to thin out street trees so as to make it possible to grow flowers, and shrubs, and fine grass lawns in the fronts of the homes.

J. B. SPENCER, B. S. A., Past Pres., Ottawa Hort. Soc.

The Bower Bird as an Object Lesson

Our artist friend, Thomas Sheward, has an exceedingly good bird drawing and article in this month's Bird Department, and one cannot refrain from drawing an object lesson which may be applied to human life.

Take that Bower Bird, which Sheward describes as building not only a nest, but covering this nest with a hut or tent; and not satisfied with this she goes to work and builds a bower, or superstructure over the tent. Then her ideas of beauty and aesthetics not having been satisfied the picture is completed by a little landscape gardening on her own account.

Were it not that Brother Sheward has a good reputation for veracity, and were it not for the fact that the Bower Bird is pretty well known as an unusual architect, one would hardly accept such seemingly wild statements as applied to the bird family. But here you have it, not only in description, but in drawing; and although the Editor has never seen the Bower Bird nor her work, yet he is willing to accept the evidence of what travelers and naturalists have observed.

Here is the lesson of life that should be pointed out: A bird with a diminutive brain builds a better shelter and protection for herself and family than the average human being could do if left to his own resources. Not only that, but this bird plants a garden, and, as explained, purely for ornamentation and presumably to make life better worth living. Many humans, (shall we be pessimistic and say most humans), if left to their own resources, would not do as much, and even with the means at hand to secure it, they overlook such things through lack of training or natural love for beauty and better surroundings.

Two Curious Facts Relating to the Weather

DID you ever notice that under certain conditions it is easier to walk when snow is on the ground than when the ground is bare? Probably you did not, and it is only during the present Winter the Editor can report such an experience.

The very first snow that we had last Fall came on dry bare ground, a fall of perhaps one and a half to two inches of damp snow. Making his regular early morning trip to get up steam in the heating boiler "at the plant," the Editor noted very distinctly that walking was exceptionally easy that morning,—only about half the usual effort seemed to be required. Suggesting this to a neighbor, he offered the explanation that the Editor probably had a little more "pep" than usual that morning. Well "pep" or no "pep," the experience was noted and placed in the "trial grounds," and the case being under observation, two additional experiences of the same kind have since been noted, one of them at night on the same steam boiler firing trip, so that the "pep" explanation would hardly apply.

It should be noted that the facts as stated were observed when there was between one and two inches of *damp* snow on the ground and when the snow lay on fairly dry ground.

Now some of you scientific "wise guys" tell us why it is.

HERE is another one, and this time there is no "pep" about it, it is just simply a plain case of observation covering a long period of years.

Did you ever notice that there is a drop in temperature just at daybreak or, to be more accurate, between the time of greatest darkness, just prior to daybreak, and the time of full daylight, perhaps just before the sun gets above the horizon? No, probably you did not, as not very many people get out of bed early enough to read the thermometer at that time in the morning, but you few exceptions who are up early enough, did you ever notice it?

That there is a temperature drop of two to three degrees at this time, when the air is comparatively calm, and when there are no clouds, is an absolute fact, and it has been repeatedly observed, not one year or one month, but during many years and many months of the year. If you get up early enough to read the thermometer at the time stated you will doubtless find an occasional morning when you will see the result mentioned. But the explanation? The Editor took this up with no less an authority than the Chief of the Weather Bureau at Washington. What did he say? While denying the fact, he offered explanations which did not explain. He referred to numerous records from the nearest government weather observer and claimed that he could find no such drop in temperature at the time stated, and yet he tried to explain why it did occur. But when the Editor asked him for a self-registering thermometer to demonstrate the matter he declined, saying he had thousands of records to refer to.

Now as this same Chief misled the Editor in connection with the use of the sling psychrometer for determining air moisture or humidity and made statements which could not be verified in practice, necessarily the Editor has little confidence in his opinion.

But any of you brothers, or sisters, who get up early enough, and who make it a practice to read the thermometer night and morning, as does the Editor, can probably verify the facts, as stated.

Then again, what is the explanation? It is doubtful if any of my scientific readers will try and explain in view of the fact that the Chief of the Weather Bureau could not do it, but place this fact in your "trial grounds" and perhaps you can elucidate something at some future time.

MADISON COOPER

P. S.—Somebody in this office has been bold enough to suggest that THE FLOWER GROWER must be a rather small proposition if it is necessary for its Editor to crawl out at five in the morning, and get up steam at "the plant;" and then go over and see to the boiler again before retiring for the night. Well, let it stand at that; but some day when you happen along here and call on the Editor, if you find him doing some things not strictly editorial in scope, don't be surprised. As a plain matter of fact, the Editor does a lot of things from pure choice and not from necessity, and "there's a reason."

No one, no matter who or in whatever walk of life, can afford to neglect *the common things of life*. Contact with the common things of life keep us in a better balanced mental condition and incidentally give us a better appreciation of what the other fellow is doing, his trials, tribulations, hopes and fears. Will preach you a little sermon on that one of these days.

M. C.

The Hero of Vernal Field

Blow! deep lunged March:—
Let smashing bugle note
Whip through the bending trees,
The battle's on!

Scowl! Winter Cloud,—
As scurrying snows
Bring ill report
Of losing conflict.
Drive them back,
Your crippled forces,
To the fray!
Send down
Your icy rains!—
They only serve
To break morale.
See!—where they join
Your ranks;
Your forces in retreat.

Look now! black lowering Cloud:—
See golden Crocus,
Hand to hand
With yielding snows
In mortal combat.

There!
Your forces run
In panic
Down the hill.

Go! battered Cloud ranks:—
Remnants of
The Winter's might.
Go madly!—
Go stampeding!—
By the South Wind
Routed.
Tell your Polar Chief
How golden Crocus
Stood against
Your night attack
Of Frost.
How, single handed,
Crocus fought with Snow
And stood, among
Your crumbling ranks,
Triumphant.

OSCAR E. JENSEN

The Bok Peace Award

The above subject has covered many pages of the periodical press during the past few weeks. Everybody is asked to vote on it, yes or no. Every copy of the winning plan submitted for a vote needs a lawyer with it to interpret it. Although the Editor admits that he is a weak-minded American citizen, yet perhaps his mind is somewhere near the average, and although this winning plan might be figured out by taking sufficient time to do it, why in the world could not the vital principles of it be stated in concise English and in few words?

But anyway the gist of the plan as outlined covers about all the good features of about all the different plans that have been suggested and this being the case it is nothing more or less than a compromise such as any lawyer might draw up to satisfy all parties to a suit. Such a plan (or any plan) is of value only in the way in which it is carried out. In short, the men behind it are of far more importance than the plan itself. Real broad minded *men* are able to go forward and do something *without a plan*, and the best laid and best outlined plan possible to draw would be useless in the hands of a lot of hagglers, quibblers or political demagogs.

Any sort of plan for peace will probably necessarily await the passing of time. The present attitude of mind of the average citizen of the world is not such as to make a "peace plan" practicable. Better education along higher and more adequate lines is the remedy and not a lawyer's compromise: Not school or college education, but education teaching brotherliness and justice; and above all a knowledge of one's obligation to do his bit; and at least a partial understanding of the purpose of human life on earth.

MADISON COOPER

Suggestions on Overhead Irrigation

IN THE Wayside Ramblings department this month, P. H. Bridge, of Skinner Irrigation Company, offers some interesting suggestions about supplying water with an overhead system of irrigation, the main thought of which is that the ground should be thoroughly wet and not *superficially* watered.

As the Editor has had the overhead system of irrigation in service for some years he is able to back up strongly what Mr. Bridge has to say and offer some additional thoughts for consideration.

It is probably a fact that few people have sufficient judgment about supplying moisture to growing vegetation to properly operate an irrigating system, and this statement is not made in a critical way, as lack of judgment is in this case mostly from lack of information. Each type of soil has its different moisture requirements to secure maximum crop growth. This requirement is doubtless much more than the average annual rainfall. For instance, if the average annual rainfall is thirty inches, the moisture requirement for maximum growth may be as much as sixty inches, and, too, without danger or damage to growing vegetation, providing the watering is done at the right time.

HERE comes in another thought. It should be possible for those who are interested in selling irrigating systems to offer at least tentative directions for applying water for, let us say, Gladioli, when grown on a definite type of soil. These directions may be given in "inside" or "outside" figures, and serve only as a guide. As irrigating systems are now operated there is too much guesswork about it, and, as before stated, few people have judgment on this subject, because they have little data to base their judgment on.

It has been the practice of the writer to start his irrigating system between 9:00 in the morning and 12:00 noon and run it through until bedtime, say 8:30 to 9:00 P. M. This is done for two successive days, at ten-day or two-week intervals, rather than for one day only at more frequent intervals. This gives the thorough wetting well down into the subsoil which Mr. Bridge suggests, and running into the night means that the water will soak into the ground more thoroughly, and without the same tendency to bake and form a crust on the surface, as would be the case if the watering were stopped when the sun was shining.

It is commonly understood that watering of plants or flowers when the sun is shining on them may result in burning of foliage or other damage. After ten years' experience with overhead irrigation, the writer cannot say that he has ever seen any damage whatever; and he has used irrigation at times when the temperature was very high, and the sunshine simply scorching. Damage might occur from wetting with the hose, but the use of an overhead irrigation system is quite different in its effect, because the water is applied continuously. Anyway, running into the night, as suggested, will probably obviate any possible damage from wetting with the sun on the foliage.

Surely the subject of irrigation, even where it has been in use for a long time, is yet in its infancy so far as its systematic application is concerned.

MADISON COOPER

The Youth of Today

THE Glad Philosopher offers some interesting thoughts in his department this month and, alas, the picture he paints is too true.

But the question is, is the youth of today essentially different than he was twenty years ago or fifty years ago? No, probably not so very much. Times are changing, and the young in common with their elders, change with the times. But if there is a difference in the youth of today as compared with the youth of yesterday, attribute it not so much to natural tendencies nor to the times, but rather to the elders who were the youth of yesterday. Parents are today largely responsible for the attitude of mind with which the youth is encumbered. How can it be expected that if the older ones have no ideals of life and do not seriously try to learn the real lessons of life and the purpose of our being here, that the younger ones should undertake lessons which cannot be understood or even considered by those who are supposed to furnish example and act as preceptors? Therefore, don't blame the young. They do what their elders, their environment, and the influences which they are situated under compel them and impel them to do.

Present times do not require the personal hardship which is so necessary to really develop the individual; and if we want to be a bit pessimistic, we may even say that there is probably little development of the individual these days. But is it so? The Editor's brain is too puny and he is too weak-minded to venture a definite answer. Figure it out to suit yourself.

Dahlia Surgery

W. W. Wilmore, in our Dahlia department this month, offers not only in description but by actual photographs,—suggestions which will save many dollars to Dahlia growers who propagate the new and more expensive varieties of Dahlias. Mr. Wilmore is to be highly commended for his liberalmindedness in making known to his brother Dahlia growers so simple and practical a plan.

Beardless Irises and How I Became Interested in Them

BY DR. J. R. McLELAND, (Kansas)

SOME time in the early nineties, as a subscriber to *Success with Flowers* then published at West Grove, Pennsylvania, I received as a premium a rhizome of an Iris labeled Iris versicolor, in the description of which it was stated to have all the colors of the Iris Family, blue, purple, white, yellow and green. At that time I was growing a water garden of Nelumbiums, Nymphae and other water plants, and happened to plant this Iris at the outlet of the pond or sump in which these plants were growing, and I believe it flowered the first season after planting, and I think it was the finest colored Iris I had seen up to this time. I know now that it was not Iris versicolor at all, but a low spreading plant of Iris Foliosa, syn. Hexagona Lamancei, which I always thought I would like better if it had a taller and more upright stem.

Soon after this I was presented with a clump each, of Iris pseudacoris and a very tall growing, late flowering variety which I believe proved to be a white form of Iris Ochroleuca. Some years later, (I think it was in 1899), a friend in Southern Mississippi sent me two items of an Iris she said were their native Blue Flag, which turned out to be Iris Versicolor, one of which the flowers have a spread greater than any Iris Versicolor I have seen. Its parts are so narrow and spreading as to give it a "spidery" appearance, often measuring almost seven inches across. The other one is more compact and nearer the type. To preserve the place of origin of my Irises I designate them by the name of the state they came from, and if more than one specimen is obtained from any state they are designated by the letters A, B, C, etc., after the Latinized name of the state. Thus in the above I write the large flowering variety Iris Versicolor Mississippiensis "A" and the smaller one I. Vers. Miss. "B" and so on if more varieties are received.

With these four species I contented myself for several years, and in my inexperienced way tried to cross-pollenize them one with the other, but more especially the Foliosa and the Ochroleuca, in order to get one with Foliosa flowers with Ochroleuca stem. At that time I knew nothing about the time to gather and plant the seed and when they did not germinate freely like corn and oats I dug up the bed, and of course lost any chance of getting any new stock from that season's work. For some time after this I continued to cross-pollenize, but let the seed self sow, and gave them no attention, until I noticed a plant with the characteristic Foliosa flower of blue, but it had a broad edging of pure white, and was held up on a stem nearly two feet high. But the stem is rather drooping and not as upright as I would wish. This seems a step in the right direction though, as the parent Foliosa has a stem but little over eight inches in length and is almost a trailer. I designate this new plant Iris Foliosa Variegata, from the various colors of the flower.

THE year 1913 was so dry our city water gave out, and I was obliged to let my Water Garden perish. By changing the pond a little, by filling in around the sides with rich loamy soil, I now have considerable sub-irrigated surface suitable for moisture-loving plants. I now began to acquire more Beardless Irises and planted this rebuilt pond or sump, until I now have upward of eighty species and varieties on trial, and I will add that so far all Beardless Irises do well for me in this damp situation. Besides others I have the following native to the United States of America. Two kinds of Cristata, two of Fulva, eight of Foliosa, two or three of Hexagona (*Walt.*) *true*, one of Prismatica, three or four of Virginica, about twenty of Versicolor and several hybrids between Fulva and Foliosa and Fulva and Hexagona (*Walt.*) *true*. Some of the Virginicas and Versicolors have not flowered for me yet and when they do the above number of varieties may be somewhat reduced, but not materially.

In this collection of native Irises are plants from the following states: Arkansas, California, Florida, Indiana, Illinois, Mississippi, Missouri, Massachusetts, New York, New Jersey, Rhode Island, Texas, Virginia, Washington and Connecticut. I should like to correspond with any flower lover who could secure for me any native Irises growing in their vicinity, as I wish to make my collection of our native Irises as complete as possible. Will state here I am not a dealer in Irises at all but am making this collection for my own pleasure and the benefit to others who care for them.

In growing these Irises in like situations I find considerable difference between kinds supposed to be identical, so much so in fact that I am inclined to think there may be several species masquerading under the name of Versicolor *syn.* Virginica. It seems that years ago Versicolor was used to describe the larger species, and Virginica a smaller and more slender one, now generally known under the name of Prismatica. There is as much difference between Versicolor and the one usually listed under the name of Virginica, as there is between Ochroleuca and Aurea. I do not know but there is more, because Ochroleuca and Aurea are readily crossed, while I have never succeeded in getting more than a few seed by crossing Versicolor and Virginica, and so far have no plants to show for this cross. I have a few planted that ought to come this Spring if fertile, but they were poorly shaped seed unlike either of the parents. While speaking of the seed will say here that Versicolor has a very large light brown seed perhaps four times as large as the very dark seed of Virginica.

OF THE twenty or more varieties of Versicolor that I have on trial there are three outstanding specimens. One, the wide spread flower of Versicolor, Miss. "A" mentioned above, and another, a veritable giant from Northern Texas, that I call Vers. Latifolius Texensis, this name describing the very broad foliage of this Iris. The leaves are from one and one-half to two and one-quarter inches broad, by some fifty-six inches in height, and the very large flowers that equal if they do not excel their next door neighbor Iris Hexagona (Walt.) growing next to them. These flowers are borne on stout erect stems up to four feet tall and these flowers, as do all true Versicolors, have a fine sweet fragrance, that is not possessed by I. Virginica. The third is I. Versicolor Virginiensis,—having no reference to *I. Virginica* but to Virginia the *state* from whence it came,—is the next to I. Vers. Latifolius Texensis, and is perhaps three-fourths as large but has the fine upstanding stem of the larger one from Texas. Most of the other Versicolors I have, grow a very short stem and if it were not for their very lax foliage the flowers would hardly show above it. Not so though with the giant variety described above for the foliage in this variety is very heavily keeled and ribbed and stands up very decidedly. I have two others, one from about the same locality in Texas that the giant variety came from and the other that in growth looks the same, from Northern Arkansas. In these two however the foliage is much narrower, but upstanding.

My experience with the true Versicolors tells me that they are not so free flowering as the Virginicas, that they are sweet-scented, have a strong upright stem, not much purple at the base of the leaves a more spatulate shaped fall, that the standards more nearly equal the falls in length, that the color is more of a grey-blue and not so variable as in Virginica, that in many varieties the foliage is lax and drooping, that the falls are never ruffled at the edges and altogether a

much larger plant and flower than in Iris Virginica. In Iris Virginica, it is very free flowering, bloom stem being very much more branched and "bending" than in I. Versicolor, much more purple at the base of the leaves, some varieties having the stem and even the spathe a full purple, adding much to their attractiveness, not scented whatever, leaves only one to one and one-half inches wide to thirty to thirty-three inches long, while the bloom stem over-tops the foliage considerably making a more showy plant while in bloom; the flowers have a more variable color, ranging from a light to a very dark purple, the upright standards being much shorter than the very orbicular, ruffled falls. (See sketch for comparison.)

For those who care to wade through it I am sending a description of the two above Irises as taken from my

From a pressed specimen of Iris Versicolor

last Summer's observations. Of course this is not for any one variety but a composite of several.

IRIS VERSICOLOR

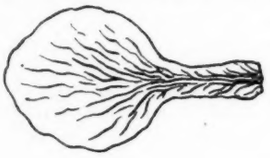
Leaves slightly glaucous, light green, twenty-four to forty-eight inches in length, keeled, drooping at the ends, thus showing the flowers which otherwise would be hidden by the foliage. Bloom stem eighteen to thirty-six inches long, stem forked but not often branched as in Virginica, two to three headed: Tube very short suddenly expanded upward: Limb pale-blue shaded green, veined blue. Falls *spatulate* and pointed at the end two to three inches long. There is no apparent dividing line between blade and haft as in Virginica. Blade blue veined white with a bright yellow and sometimes a brownish yellow splotch at claw: Haft greenish yellow veined purple: Standards very *spreading, narrower but almost as long* as the falls, *oblanceolate* and about the same color as the falls: Styles purple edged with white: Anthers cream edged with purple. Filaments cream: Pollen light yellow: Capsule long, cylindrical: Seed *large* light brown. *Very Fragrant.* Season May and June.

IRIS VIRGINICA

Leaves slightly glaucous, dark green, purplish at the base, eighteen to thirty-three inches in length, the "bending" stem extending well above the foliage, forked low down and often branched above, multi-headed: Tube very short and suddenly expanded upward: Limb dark purple to violet (shaded to green, veined violet to darker: Falls orbicular-cuneate two to three inches long: Blade about equal to the claw, reflexed and somewhat ruffled, of velvety purple or violet-blue with base of velvety white strongly veined violet-blue and washed yellowish green on haft. Standards upright spreading slightly, oblanceolate and much *smaller* than the falls, mingled violet and white: Style-arms bright blue-violet bordered white on sides: Anthers purple: Filaments darker purple: Pollen light yellow. Capsule shorter than in Versicolor and the seeds darker and smaller. Showy but not fragrant: Season May and June.

I have sent specimen plants of these and other Irises to the Iris Trial Gardens at Weston, Massachusetts, and hope the American Iris Society will take some action at the proper time to designate these species with their proper names, and clear up a lot of misinformation on this subject.

AS TO Prismatica I have but one specimen and have never seen any other in flower, and as it was the first season after planting was not representative of what it will do when better established. It is a dainty little thing with very narrow grass-like foliage and rhizomes more like coarse grass roots than an Iris. The specimen I have is white veined and tipped purple with a little yellow at the base of the falls. Bloom stem very slender and few flowered. But it may change with our rich Kansas soil as did Versicolor and Virginica. They now grow much larger and stronger than when first received.



From a pressed specimen of Iris Virginica

I have eight varieties of Foliosa syn. Hexagona Lamancei, six of which I have seen the flowers. They vary considerably as to width and height of leaves and stem as well as shape and color of flower. The one objection to Foliosa is the shortness of the stem and the overtopping foliage. This objection is partially overcome in the two following and the hybrid *Dorothea K. Williamson* which grows more like a true Hexagona.

FOLIOSA VARIEGATA

Leaves two to three feet, rather narrow for the height, drooping. Stem simple, winding eighteen to twenty-four inches tall, often not erect but drooping over, causing the flowers to appear nestling amongst the foliage, with several large leaves the upper exceeding the flowers, from one to two flowers springing from each lower leaf and some times three from the upper one. Spathe-valves leaflike, tube one inch long, ovary hexagonal and *creamy white*, and does not leave the spathe-valve until some time after flowering. Limb over three inches long violet to bright lilac with a rather broad band or edging of white: Falls over three inches long, blade ovate, bluish violet, banded with a rather broad white edge, the center white fading to yellowish green at the keel of the downy claw. Claw green. Standards somewhat shorter and narrower, drooping downward and outward, violet-blue with a white line in lower center fading to green at claw: Style branches very concave, green, upper end purple fading into green at lower end of upper third. Capsule somewhat hexagonal short and thick. Seed very large but not as large as the type.

Now I will add the partial description of Iris Foliosa Texensis, the finest Foliosa I have.

Leaves about three-fourths the size of the above, rather narrower, stem eighteen to twenty-four inches. Limb very dark to blackish violet, standards and falls very dark violet if not royal purple upon first opening, fading to lighter. About one-third broader in both standards and falls than the above, and has a small white center verging into orange at the downy claw. Style arms concave, almost black at the upper half. Otherwise similar to the above Foliosa Variegata. In some of the others that I have studied is Hexagona Lamancei the kind described by Dykes of England, I find the flower stem about eight inches and the capsules globular and rather inclined to be three angled instead of six as in the above two. Also the seeds are much larger.

HEXAGONA (WALT.) TRUE

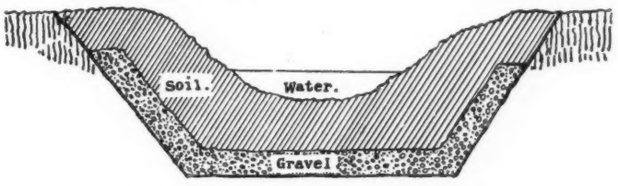
This is the Orchid Iris of Florida and the South. Leaves twenty-four to thirty-six inches by about one inch, very narrow for the height, dark green, very erect. Stem two to three headed, leafy, overtopping the flowers, erect, rather large and thick for the height. Limb greyish green veined and washed bright blue, three inches long: Falls about one and a quarter by three and one-half inches, somewhat recurved: Blade ovate-cuneate, one and a quarter by two and one-eighth inches, white overspread with blue, somewhat netted, some white at the claw the slightly hairy greenish yellow ridge extending into the lower part of the blade: Standards similar except narrower, upright, blue and fading to whitish striped dark purple at the claw: Style-arms purplish edged and striped green the full length of the arm, very concave, crests rather short and stiff, colored lighter blue: Anthers longer than the filaments, greenish white edged pale purple: Pollen creamy white, lobes wide apart with pale green between: Stigma double. Spathe-valves green, sometimes leaflike. Tube dilated upward. Capsule rather a disappointment to me as I expected to find it Hexagonal but it is no more so than Versicolor. Seed large like Foliosa *syn.* Hexagona Lamancei. Now I will describe a hybrid introduced by Mrs. Jennie Dean, of California. It seems this is a natural hybrid as it appeared among a lot of Iris Fulva that had been collected.

IRIS HEXAGONA PURPUREO (PURPUREA)?

Undoubtedly a natural hybrid between Hexagona and Fulva. Leaves similar in every way to Hexagona except more slender, like Fulva. Stem a little less than three feet, two to three headed, rather slender for the height, leafy, overtopping the beautiful flowers: Limb about three inches long, reddish purple overcast with reddish brown: Falls one and a half by three inches or more, very much recurved upon first opening, the

tips touching the stem as in Iris Fulva, but later changing to almost horizontal as in Hexagona: Blade raisin purple or a bronzy purple, darker splotch in the center at the base, relieved by an orange line extending out from the haft, outer portion of the blade as are the standards also, splotched with brownish purple: Notched as in Fulva. Standards one by two and three-eighths inches, a little shorter and narrower than the falls, notched, and the same color as the outer portion of the blade, a tawny reddish brown, edged as in the haft with buff, making rather a delicate appearance at short range: Crests long and rigid, purple-bronze: Spathe-valve leaflike green: Pedicel medium: Tube about one inch long: Ovary hexagonal, as is the capsule also, green: Anthers and filament greenish-white: Lobes white: Pollen cream. A well-balanced cross between Hexagona and Fulva. Likes *moisture*. So far as known originated in a Texas swamp.

I have often wondered why in describing Iris Aurea—species—that it is never mentioned that it has a wonderfully sweet fragrance something like a Lily. It might be well here to describe how to make a subirrigated bed for moisture-loving plants. Make your bed or pond as large as you wish, but take out all the dirt to at least three feet in the center and let the bottom slope upward from this to about one foot, or better fifteen inches. Cover the whole bottom with gravel or ruble stone to a depth of four or five inches and then fill up to the outer edge with very rich soil but let the surface slope toward the center until at least a foot lower than the edges.



Showing construction of sub-irrigated bed for moisture-loving plants.

Locate where you can either use city water or have the drainage of some building run through it. Always have the outlet so this pond or bed may be drained in Winter so the water will not stand about the plants, but in Summer most varieties will stand it. Plant such varieties as Versicolor, Virginica, Prismatica, Hexagona, and Foliosa in the lower section, then the Kaempferi, Spurias, Ochroleucas, Aureas, Missouriensis a little further back from the water line. I find that all Sibericas do better here too. The reason for the layer of gravel is to hold the moisture. It will go a long while without filling with water this way, but in the growing season it is better to have plenty of moisture.

IRIS FULVA SYN. CUPREA PURSCH

Leaves thin dark but bright green eighteen to twenty-four inches long, not exceeding the stem which is forked low down, and the lower stem leaves are twelve inches long, pedicels usually very short: Tube greenish yellow, one inch long: Limb loosely expanded, reddish brown or copper color, variegated green: Falls one by two inches: Blade longer than the haft, obovate—cuneate, notched as are the standards, reddish brown, deeper in the center, bright and velvety, very much recurved, almost reaching the stem upon first opening, afterwards becoming more nearly horizontal: Style-arms terracotta; Crests very short and stiff: Stigmas quite double, lip pointed, concave instead of convex as in the German Iris: Filaments and anthers longer than the style-arms, both whitish: Pollen white: Ovary hexagonal: Standards five-eighths by one and a half inches.

My experience with this species is limited but it has flowered for me. I think I have some two or three varieties of Fulva judging from the rhizomes and foliage.

Iris Fulva is the seed parent of *Fulvala* and *Fulvala Violacea*, both English productions and *Dorothea K. Williamson* all of which were pollenized by Foliosa. But perhaps not the same variety. I have some of the Foliosa that came from England and also some of the same variety used to produce *D. K. Williamson* and I know they are very different except they are true Foliosas with the very short bloom stem. I will not try to describe *D. K. Williamson* as most all of your readers have it or have seen it described. I still have quite a number in my trial beds that I may tell you about later.

Size and Strength of Dogs

THE largest dog I have ever heard of was the St. Bernard, Plinlimmon —weight 210 pounds and height (measured at the shoulder), 34½ inches. When we consider mere bulk and weight, the St. Bernard is unquestionably the largest breed of dog, though some others are stronger—anyway, seem to be, because of more pep and adaptability.

Many people will tell you that the mastiff is the world's largest dog, probably because this breed is known to have been used years ago for draft purposes. The mastiff is a strong dog, and a useful one, but he is not, on the average, as heavy as a St. Bernard. The common impression that Newfoundlands are very large comes from the stories of their rescue work in the water and on the mountains. Their size is easily surpassed by that of several other breeds.

Of course the Great Dane is a big dog—and "all meat," too, astonishingly muscular and powerful, and not a bit slow to exercise his great strength. One breeder tells of locking a Great Dane in a barn and seeing the dog tear the door completely down to get out. A few instances of 34 inches at the shoulder have been recorded, but usually Danes are considerably below this in height.

The most magnificent pair of dogs I ever saw, from the viewpoint of size, strength and efficiency, were "Zero" and "Arctic," huskies brought to Seattle from "north of 65." Each weighed 120 pounds, and together they could draw a sled weighted with 1,000 pounds of freight. On some occasions Mr. Scotte, owner and driver, found it necessary to load each dog with a pack of 100 pounds, and as a reward gave them a daily feed of twenty pounds of moose meat.

Any ordinary dog of average size is much stronger than is commonly supposed. A 40-pound bull terrier will drag a 200-pound man all over town unless the man wraps the lead-cord around a post, or resorts to some other stratagem. The dog's feet are better prepared for gripping the ground and he has more of them, four as compared to two, four points of contact with the earth, better *traction* than man.

I have referred to the strength of the northern sled dogs. Not all of them are as big as "Zero" and "Arctic," but they are all surprisingly strong. Even the Eskimo dog, regarded as too light for freighting purposes, does valiant service, and the Indian dog, being larger, makes a still better "horse." However, the huskies are the premier sled dogs. Weighing on the average, 80 to 90 pounds, and with the fighting spirit and determination of an African buffalo, they do not know what it is to give up. Four of them will draw a load of 600 pounds, and go 40 miles a day—50 or 60 under pressure.—L. E. EUBANKS, (*Our Dumb Animals*)

Where do Elephants Die?

One of the great mysteries of the natural history world is where elephants go when they die. Curiously enough the body of an elephant that has died from natural causes has never been discovered either in India or Africa. Among native races there is a widespread belief that, when the great beasts feel the end approaching, they make their way to some secret hiding-place in which to die. The whole question is just as big a mystery as ever, in spite of the fact that many attempts have been made to solve the problem. The districts where elephants occur in a wild state have been scoured in all directions in the hope of discovering the last resting place of the huge animals, but without any result. Quite recently another determined attempt has been made to penetrate the mystery, but, up to the present, nothing of any value has been discovered. As a matter of fact the problem has more than a scientific interest to it. Any individual who is so fortunate as to find the elephants' graveyard will certainly have made a fortune. On this spot there must be a huge accumulation of ivory, a commodity which is continually increasing in value.

—*Scientific American*

Sometimes when Asters approach the budding stage they will turn yellow and die. This may be caused by various things, an ant hill, a white grub, or Aster yellows. The ants sometimes "plant" aphids which may be seen as white insects on the roots. Bisulphide of carbon dropped into an ant hill will destroy the ants. Asters ruined by white grubs cannot be helped and with Aster yellows it is the same. White grubs work mostly near sodland. Clean ground at all times and new ground each year for Asters are desirable.

The Dahlia

Dahlia Surgery

BY W. W. WILMORE

WITH the accompanying illustration but little explanation should be necessary to tell of this simple but useful method of saving many a broken-necked Dahlia tuber. The fact is you can't beat it to save your neck.

Dig as carefully as you may, and use the same care in handling and packing yet one often finds a few broken necks. On the cheaper and more common varieties this is not a matter of any great concern. But on the higher priced beauties of the present day, a broken neck is a severe loss. Many an otherwise good root is thrown away as worthless if the neck is broken. Yet with the illustrated method, all but the very worst cases can be saved if the parent clump is in good condition.

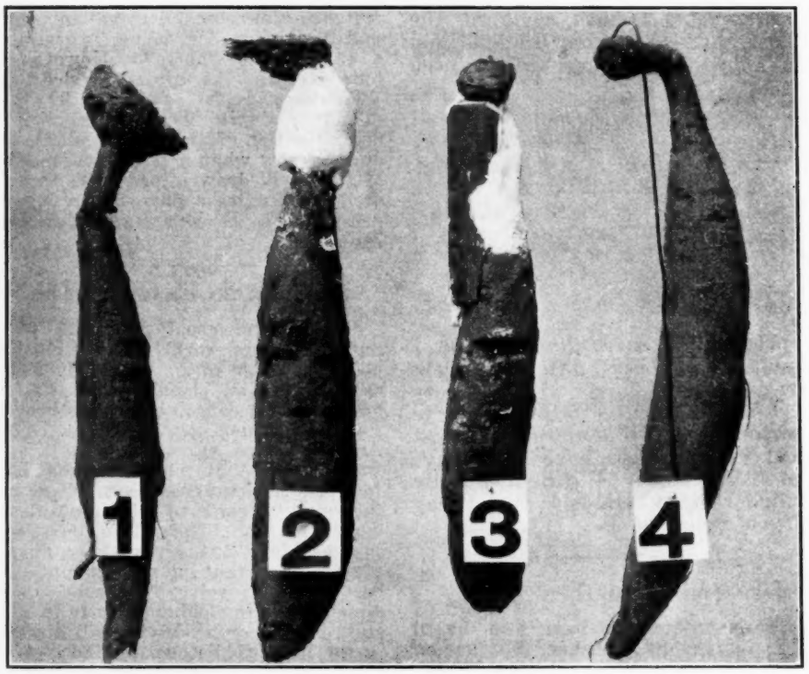


Fig. 1—The Patient
Fig. 2—After Treatment

FIG. 3—The "Sleeve" Treatment
FIG. 4—A Handy Tool

The "makings" for the operation are very simple and will not cost over ten cents for a hundred operations. No anesthetic, nurse or understudy is required. A common table knife, some plaster of Paris, and a little water are the chief articles needed.

First get the root ready: If the break around the tuber is no wider than a thin dime it may be treated as it is, but of course would be all the better if the break could be closed at some point by bending. When the break or gap is wider, some device should be used to bring the rupture together at some point. The wire shown in Fig. 4 is a very handy device and broom wire size is heavy enough. Make a hook on one end and a right angle turn on the other. Place the hook over the end to be treated and push the other end into the root. This will hold while the work is being done. A very few minutes are required for the plaster to set. The wire may then be used on another patient. Other devices may be used perhaps which are just as handy. Figure 4 shows a treatment with a "sleeve" made from a section of an old Dahlia stalk. A bit of cardboard may also answer the same purpose or the tuber may be held in place with weights, etc.

Only a little plaster should be mixed at a time as it sets so quickly and care should be used that the plaster is not too wet or it will run into the break and prevent the desired union. Make it just wet enough to drop from the knife and then spread it over the part to be treated one-half inch or over each side of the break.

This plaster will nearly always break away during the summer growth of the plant, but will do no harm even if it does not break. Of course all this presupposes that the tuber to be treated has been removed from the parent clump and has a good eye attached, and is in plump sound condition. Care should also be exercised not to cover the eye with plaster.

After treatment the tuber should be laid away in damp moss or other damp material and kept in a growing temperature, that life may start soon as possible.

Tubers so treated will not show life as soon as unbroken tubers, as it takes time to callus and make the union.

I have used this scheme for a number of years and find it works well.

Dahlia Stunt

THIS disease is becoming very prevalent in this country and demands the serious attention of all who are interested in growing or selling Dahlias. Many novices and amateurs who might become enthusiasts, plant Dahlias one or two years and quit. Why? Nine times out of ten on account of stunt, and the remaining tenth time on account of improper cultivation.

Plants affected with the disease make stunted short jointed growth, and either fail to bloom altogether, or produce only imperfect or abnormal flowers. Even the roots are often abnormal in form and fail to keep through the Winter, even though the best of storage conditions are provided. Unless growers are more careful in the future not to send out stunted stock, and those who buy refuse to buy from those who repeatedly send out stunted stock, the present popularity of the noblest and most handsome autumn flower for American gardens is bound to be of short duration.

The cause and nature of the disease is not very well understood and experts do not agree. However, with proper field and garden culture, I have never known healthy stock to develop stunt. The disease, if indeed it be a disease, seems rather to result from improper cultivation or propagation. Stock which is free from stunt, propagated by division of the roots, and planted at the proper time in clean well drained soil will probably not develop stunt. On the other hand, stock which is forced for propagating purposes, if carried too far is almost sure to develop a certain percentage of stunted stock. It is also possible that green manure in contact with the roots, or used in excessive quantities, improper drainage, or too early planting may develop a stunted condition, but I doubt if this is the true stunt which appears year after year wherever the stock is planted.

If all of us who grow Dahlias for the trade will limit properly, propagation by green cuttings, even of those varieties for which the demand exceeds the supply, and thoroughly rogue our fields of all stunted or abnormal plants, even though valuable stock must sometimes be destroyed, I believe that it will be possible to keep stock healthy and free from stunt.

During the past two years, frequent complaints have come to me from am-

ateurs and even commercial growers of stock developing a large percentage of stunt. Generally the best varieties are the ones affected—those which the amateur plants and nurses with enthusiasm only to be rewarded with a stunted plant. Who is to be blamed if he loses heart and decides to grow something besides Dahlias?

I would like to hear an expression from others interested in Dahlia Culture.

N. A. HALLAUER

Dahlias for Home Decorations

In these days of better homes,—days when people take pride in their home surroundings,—flower lovers have found that Dahlias prove a valuable asset for decorative purposes. Not only in the garden, where their riot of colors beautify the entire surroundings, but in the home. The variety is so great that one may have several shades that will blend with any color scheme. Dahlias bloom longer than most of our flowers, sending forth their glorious hordes of beauty from early Summer to late Fall, which makes them indispensable flowers. One can always be sure of having blooms to decorate his rooms, if he plants Dahlias.

My favorites are the dainty Cactus Dahlias, that have good stiff stems and an abundance of flowers and buds. The variety named *Effective* seems to blend well with most every color scheme. It is an exquisite shade of apricot and amber. The plants are a mass of blooms all season, so that one may have sufficient flowers at any one time for a small vase or basket, if he has but one or two plants of it. The well known Cactus, *Countess of Lonsdale,* which is on the salmon-red shades, is another dependable bloomer that lends an atmosphere of grace and beauty in any room where brown, tan or gold is the color scheme.

In blue and pink rooms the dainty *Marguerite Bouchon* is most effective;—its beautiful rose-pink with white center harmonizes perfectly. The glowing crimson *Rene Cayeux* is gorgeous where deep rich color is desired. It is a most abundant bloomer. The pure white Cactus Dahlias, *Snowdrift* and *Yvonne Cayeux,* give life and add beauty to walnut and mahogany surroundings. The star-like shape of *Yvonne Cayeux* makes it especially attractive. On the reddish apricot shades, the Cactus named *Alfred Vasey* is good to brighten up a dull corner. Among the soft shades of salmon and gold, *George Walters* is my finest. Other pastel shades that are good are *Hoffnung, Wodan* and *Johannesburg.*

J. HERBERT ALEXANDER

How I Grow Dahlias

May I give a few hints to amateur Dahlia growers on how to secure good flowers? If these suggestions are followed, the results will be encouraging.

During the fifteen successive years in which I have grown Dahlias I have used but one method. First of all, I do not pinch back the main shoot, but take off all the side shoots, thus allowing all the strength to go in the main one. This would probably appear to some that only one flower can be gotten to a plant. All the side shoots having been pinched, the plant is forced to make new shoots from the root. Each new shoot, as it appears from the root, I treat the same as the main one. This keeps my Dahlias in a constantly growing condition which I find is necessary to produce good flowers. After the plant has attained a bush-like appearance, I often find it beneficial to thin out some of the lower foliage, in order to give the new growths air and sunshine. This method affords me a steady supply of large perfect flowers with long stems.

It is very important to keep the ground well cultivated. Mulching, if it can be had, is a great benefit, and will make watering almost unnecessary. I use commercial fertilizer which I work into the ground after the plants have made a good start, and which I continue to use about every three weeks.

Concerning diseased or stunted plant, whatever it may be, so far I have never experienced it.

My method is simple. I feel safe in recommending it to those who have been unsuccessful in the past.

The beauty of a Dahlia is attained when it reaches its height of perfection. Naturally the flowers at a show are, in every case, the very best of those that the exhibitor has produced as a result of great care and patience.

REINHOLD GREINBERG, (In Bulletin of the American Dahlia Society)

Early Planting vs. Late Planting

By HARLEY T. PECK

(In Bulletin of the American Dahlia Society)

Some Dahlia growers, amateur and professional both, believe in and practice early planting and some don't. I have heard some of the arguments in favor of early planting and from experience favor this method from the standpoint of longer blooming season, better roots which winter better and just as good flowers. In fact for cut flowers, it appears that a good vigorous strain, of a good variety will produce more flowers and better ones during October if planted early, say April 15 to May 15, depending on the weather.

The only argument I have heard in favor of late planting is that of growing flowers for exhibition. But cannot exhibition flowers be grown from plants set out early? I, for one, would like to hear the other side of this question.

Cutting Dahlias

Dahlia blooms should be allowed to get fully open, or to be fully open a day or two, before cutting. If cut before mature and somewhat hardened, they will wilt and remain wilted. Some flowers, like the Peony and the Gladiolus, will stand staunch and firm, even if cut in the bud or opening stage; but a Dahlia, cut while soft and sappy, seems to be pretty helpless. Such, at any rate, has been my experience.

BENJAMIN C. AUTEN

Morning Glories "rise betime" as their name indicates.

Do Morning Glories Beat You Up?

You will have to practice early rising if you beat the Morning Glories up. Have you noticed them in the morning when you get up to appear so fresh that you might think that they had burst open when they heard your footsteps approaching? For two solid weeks, I got out of bed anywhere from one to three o'clock and slipped into the garden where the Morning Glories were growing and blooming, and with a flash-light I tried to catch them in the act of unrolling their delicate flowers. I found many of the funnel-shaped flowers untwisting, but I was so sleepy that when I lay back down to rest awhile, the Morning Glories got ahead of me. Finally, I got up and sat down by the side of them and remained awake. Between three and four o'clock they slowly began to untwist their corollas and I finally saw them open. I found that they opened before daylight in order to meet a hawkmoth that flies only at night, and pays night blooming flowers their final visit just before daylight. And then after daylight, came the rather doleful buzzing bumblebees, who on seeking the nectar from the opening flowers, carried the pollen from one flower to another where the hawkmoth failed to do the work properly.

ROBERT SPARKS WALKER

The Rose

Getting the Best Out of Your Roses

BY J. HORACE McFARLAND, Editor *American Rose Annual*

EVERY new year ought to be for every Rose lover a better year than any year before. Even if his Roses fail, his effort can be and ought to have been a more intelligent and spiritual effort, so that he has gained in the only substantial part of him, even though he has fewer Roses to enjoy.

A lifetime of garden love and garden observation has settled me in the feeling that the mere physical enjoyment of the sight and the smell and the touch of flowers is the least of the satisfactions to which the real gardener is entitled. This reflection is emphasized for me by the receipt of a letter from a shut-in who writes glowingly and luminously and intelligently and critically about Roses; and then, quite without any complaint, at the end of her letter recites the fact that she begs excuse for the pencil she has used because she has been two years in bed with a spine disorder, and cannot personally get into the garden.

This dear woman is gardening in her soul; she has the substantial part of it. When she could work with her hands and eyes and mind she was accumulating the things of value that should inure to every garden lover. Also she was getting together the garden friendships which I find increasingly desirable and precious; and increasingly satisfactory.

IT IS because of this point of view, wholly unmaterialistic to be sure, that I expect for every real Rose gardener a better year in 1924 than he had in 1923, or any other previous time. There is no least thought that he shall intermit any of his efforts to get the best Roses, to put them in the best places and to do for them in the best way. That is the way in which he must accumulate his capital, the income of which later is the sort of precious income that my bedfast garden friend above mentioned is now receiving.

One of the best ways to build up this garden capital is to meet garden folks in the garden and elsewhere, to read such sincere garden literature as is contained in THE FLOWER GROWER, and to associate oneself with worthwhile garden organizations.

As many readers of THE FLOWER GROWER will know, I have been for some nine years Editor of the publications of the American Rose Society, and have come increasingly, therefore, in contact with those fine spirits the world over, who acknowledge the sway of the Queen of Flowers. I have not seen many of these people with the physical eye, but I know they are fine people, because they all write alike. My mail in a single week will not seldom bring me letters from Australia, from England, and even from China and Japan; to say nothing of the constant stream from all over the United States. A request for suggestions as to what Rose lovers would like to know about in the forthcoming Annual brought concrete and definite replies from 149 Rose friends. I can always read between the lines and see beyond the limits of human vision what is back of these helpful, instructive, thoughtful and sweet-spirited communications. I am dealing with those who are accumulating the spiritual values of the Rose by association.

LAST evening I met a lonesome Englishwoman. She has not the quality of easy association with the strangers among whom she has been flung by the exigencies of her husband's profession. When I used the word "garden" in her presence, light flashed into her eyes, and I know of nothing more sure than that if she and I both live for three months from this date, she will be having a better time of it because she has been made free of my garden. She will have some of this association of which I speak.

The American Rose Society has for several years adopted the plan of sending out a Members' Handbook, in which is printed an alphabetical list of the members of the organization the world over, this being followed by a list headed "Where the Members Live." The subheading of this list reads "In order to promote Rose intercourse this list by states and towns has been compiled. Members are urged to communicate with others, and to add their friends to this Honor Roll."

Then there is before the eye the alphabetical list of towns and the members in the towns.

Before these words are printed I will be doing a business swing through Florida. I will have with me this little pamphlet, which tells me where there are Rose members and who they are. Does anyone doubt that I can be absolutely assured, in consequence, of delightful experiences as I refer to the people whose names are given me in this Blue Book of true garden aristocrats?

This membership is very aristocratic, I discover, and yet it is the most democratic thing on earth. A very wealthy New York banker writes me—with a pen, not through a typewriter; the foreman of the street asphalt repair gang stops in to my garden to tell me about his own achievements and desires; one of the wealthy manufacturers of explosives is humble in his inquiries, while the farm woman somewhere in North Dakota who has discovered how to make Roses flourish where the books say they cannot flourish is properly and joyfully exalted in this Rose aristocracy.

THEREFORE, in suggesting to the readers of THE FLOWER GROWER an increase in their garden joys for 1924, nothing occurs to me as quite so potent for that increase as membership in this garden fraternity. It reached last year the high-water mark of twice as many members as any other of the garden flower societies, and this year it seems to be reaching over that high-water mark by more than twenty-five per cent. I think I can predict with safety at least a score of such Rose pilgrimages as in 1923 distinguished the members of the American Rose Society and their friends. Such a pilgrimage is simply and quickly organized wherever there are two or three Rose gardens and two or three Rose members, because they agree on a day in June to visit each other and to invite to visit with them anyone else who cares for Roses and is willing to go about to see them and to talk about them.

I have barely suggested another of the pleasures of this Rose fraternity in the book, the *American Rose Annual*, for which I receive undue credit as Editor,—being merely the switchboard of this Rose telephone exchange, the assembler of the Rose lore that seems to make each of these books much better than its predecessor,—and so attractive to the eager seeker for the spiritual advantage of the Rose, that one woman who wrote me within a week said she had read it through "twice from cover to cover" and wanted more!

I have not given in this any suggestions as to purchase, culture and treatment of Roses. I have given, I believe, a very potent suggestion as to the culture of the mind, the heart, the soul, of the real Rose lovers.

Hints on Pruning Roses

PRUNING is the most important operation in the sucessful growing of Roses, whether for exhibition or garden decoration. Illogical as it may seem, the general rule is that the more vigorous and healthy the plant the less need is there of pruning, and vice versa. I am often asked to explain why specimens of such Roses as *Hugh Dickson* or *Ulrich Brunner* flower so sparingly, although the growth of the plant may be all that is desired, and, as a rule, I find that every year the plants are cut very hard, and, as a consequence, make too much wood to flower freely. Another rule to which there is no exception is that all old wood that bears only sickly little growths should be removed, giving more space and air to the healthy young growth, and shoots that are immature or damaged in any way should be similarly treated. The more open the plant can

be kept, especially in the centre, the better it will grow and blossom, and for this reason care should be taken to cut the shoots to an eye pointing outward. It is very essential also to make the cuts as clean as possible, and for this purpose nothing equals a sharp knife. A knife is not convenient or comfortable to use, as the spines of the bushes are apt to be troublesome, but if good leather gloves are worn this drawback will be minimized.

It may be useful to beginners if I give the requirements of the main classes, but in every case the condition of the plants will largely influence the treatment given. The Hybrid Perpetuals as a class differ widely in habit, and it will be found that the rampant growers, such as *Hugh Dickson* and *Frau Karl Druschki*, will flower much more freely if the healthy shoots are merely tipped, the general rules before given always being followed. Should these varieties make too much wood even with this light treatment, it is advisable to lift the plant with a fork, thus checking root action for a time. The weaker varieties will need harder pruning, leaving only three or four eyes on the best shoots.

The H. T.'s are treated in much the same way, but even the strong growers in this class, excepting, of course, the Climbers, may be pruned very severely if desired, or if space allows, they may be grown into large bushes by pruning lightly. The true Teas and the Chinas are best left to grow freely unless for exhibition, but being rather tender it is often necessary to remove shoots that have been damaged by frost. The spring and summer-blooming Roses, such as the Austrian and other Briars, the Banksian, Scotch, Mosses, Damasks, Multifloras, and Wichuraianas, should all be pruned very sparingly as the blooms are borne on the wood made in the previous season. Any lateral shoots may be cut back to two or three eyes to produce finer blooms, and all old wood should be removed directly after flowering to encourage young growth for the next season's flowers.

With regard to such varieties as *Blairi No. 2, C. F. Meyer, Rose a Parfum de l'Hay, Mrs. A. Waterer*, and others of like nature, I have found the best practice is to leave some of the young growths full length and to cut others back to about half their length. It will be found that by so doing the flowering will be considerably extended, the shortened shoots throwing out laterals which will come into blossom some time later than the unpruned shoots.

There is very little difference of opinion as regards time for pruning, it being generally conceded that the month of March is the best time to prune all classes but Teas and Noisettes, these latter being delayed until April owing to the fact that they are very liable to injury from frost. Pruning, like most arts, is only learned by practice and experience.—*Gardening Illustrated*

My Roses in 1922

BY MRS. T. L. McCREADY

HAVING read Mr. McFarland's articles in several magazines with so much pleasure I am now glad to send in a report of my experiences in Rose growing, in answer to his request of garden lovers, in THE FLOWER GROWER for October 1923.

My garden is a new one in the latitude of New York City. In May, 1922, though I had not planned to put in Roses that season, not having prepared the beds, I fell into temptation through an offer of Henry A. Dreer, Philadelphia, at reduced prices; and bought two dozen "pot grown" Hybrid Teas, which came in good condition with buds ready to bloom. I planted them in a good bed, putting a trowelful of sheep manure in each hole, and a handful of bone meal around the top.

I did not keep a record of Roses that year, but had lots of blooms. The only entries in my garden diary referring to Roses were that they were mildewed and black-spotted in July (a very rainy period), and that I had had over one hundred blooms, at least, up to August 1st.

On November 1st I moved them into their permanent bed. This bed was a labor of love—dug out to about three feet in depth, and made up of the top soil (quite a heavy clay); some of the more gravelly sub-soil; twenty barrow loads (a small flat barrow) of compost; and about fourteen of old cow manure. A duplicate bed, (the two in the shape of two half circles, the path going between), had only manure—about twenty loads of the wheelbarrow. The Roses in the two beds being of different season's planting, etc., the comparison of the efficiency of compost or manure is not definite, though the newer Roses in the bed all manure have grown better this year. But then, the older ones had been weakened by bad black-spot the Summer before.

OF THE Roses moved last Fall all came through but one *Lady Ashtown*. This Spring I bought two dozen more, also of Dreer. I ordered dormant stock but they did not send until May, and they were the same plants in pots, with buds, as last year. These were given a bit of sheep manure and bone meal at planting, also.

1923 was a very dry Summer and frightfully full of bugs, after our Winter of heavy snow, as all who work in gardens have been sadly aware; but with constant care, keeping the soil well cultivated, watering weekly, and applying liquid chicken manure every two weeks during most of the Summer; the Roses did very well.

The black-spot appeared about the first of August, I think, on the older plants, and later, but not so badly on the newer ones. Also a good deal of mildew. Is there *no* efficacious remedy for these plagues?*

Following is a record of blooms, from which a very few may have been omitted, picked during a short absence on my part, by other members of the family.

1922 PLANTS	May	June	July	Aug.	Sept.	Oct. & Nov.	Total
3 Laurent Carle		8	8	8	14	1	39
3 Rose Marie		8	13	7	6	6	40
2 Lady Ashtown		20	21	8	11	8	68
3 Lady Ursula		11	15	12	19	8	65
3 Pharisaer	1	7	15	6	17	1	47
3 Mrs. A. R. Waddell		9	19	18	16	9	71
3 Mme. Leon Pain		14	7	4	8	3	36
3 Willowmere		13	14	6	5	6	44
1923 PLANTS							
3 White Killarney		9	10	5	11	4	39
3 Mme. Segond Weber	4	10	12	11	8	5	50
3 Los Angeles		4	9	8	9	3	33
3 Mrs. A. Ward	1	18	35	21	11	11	97
3 Mme. Butterfly			8	5	12	2	27
3 Duchess of Wellington		1	18	19	19	14	71
3 Kais. Aug. Victoria	1	9	11	11	1	6	39
3 Golden Ophelia	1	20	18	26	7	15	87
Totals	8	161	233	175	174	101	853

THE bushes were full of buds when finally stopped by the cold about the end of November.

You may deduce what conclusion you please, but I would just like to say that quantity does not mean so much as charm, to me, and I value my fewer exquisite *Mme. Butterflys* ten times as high as all the *Lady Ashtowns*, for instance, in the world.

Next year I shall make some changes. *Pharisaer* and *Lady Ursula* can be lovely, but they also often come small and washed out and are uninteresting. *White Killarney* mildewed badly, and new growth seems to come in a queer way on the tips of the shoots. The dear old *Duchess of Wellington* is the queen of this collection, lovely in *every* way. *Mme. Leon Pain* is very beautiful for a pink. *Golden Ophelia* with me has been hardly more than a creamy white, though very pretty. *Mrs. A. R. Waddell*, which does better than any other on Long Island, according to my aunt in East Hampton, is very small and coy like a little wild Rose here. I shall discard *Lady Ashtown, Mme. Segond Weber* and *Pharisaer* next year, and get *Radiance, Ophelia* and three more *Duchesses of Wellington*, I think.

Now I hope to hear lots more reports from other Rose lovers, for to me, at least, Roses are—in spite of all the struggles with pests and blights,—the most heavenly of all flowers.

* Mr. McFarland insists there is an "efficacious remedy for black-spot and mildew"—the treatment devised for the American Rose Society by Dr. L. M. Massey, of Cornell; whose investigations of these two Rose diseases are by far the most thorough yet undertaken. In the 1922 *American Rose Annual* this treatment is described. It requires a mixture of nine parts *dusting* sulphur (not ordinary "flowers" of sulphur, but the much finer dusting sulphur any good seedsman ought to have) with one part powdered lead arsenate. This is to be blown (with a powder gun) on the Rose bushes before they begin to bloom and before there is any sight of mildew or black-spot. The dose is to be repeated every two or three weeks all Summer, and whenever any leaf shows black-spot it is to be at once picked off and burned, not left on the ground. This treatment has controlled mildew and black-spot, but it must be persistent. Black-spot cannot be cured—it must be prevented.—Editor

The American Rose Annual for 1924, referred to by Mr. McFarland on the opposite page, promises to be one of the most interesting ever brought out.

The Peony

Blind Scraps of Peony Roots

BY EDWARD AUTEN, JR., (Ill.)

THE underground system of a Peony plant consists of a fleshy central mass from which the stems grow upward, and from which also the long finger roots branch downward. The new stem growth starts in the Spring from buds or eyes which have formed the previous Summer on this central mass, commonly called crown material, and which buds have then lain dormant through the Winter.

Peony roots are divided in the Fall, and an old clump of roots is cut into as many new divisions as possible, each with from one to five eyes, and with crown material and finger roots to balance top growth from the eyes. But the roots are brittle and easily broken, and often in trimming the divisions to proper shape there will be scraps of finger roots, also of crown material which have no eyes attached. One naturally wonders whether it is worth while to plant these "blind" pieces.

A LONG finger root with no crown material attached will live for several years underground and make a callous like a round knob on the end which has been cut, but it absolutely cannot make new eyes or stalks, and is worthless. But a piece of crown material, either with or without some root attached, will usually develop eyes and eventually make a fine plant. There are probably dormant buds scattered through the crown material, at least in some varieties, for I have had many roots not only send up stalks the first Spring after planting, but even bloom the first season. Others may not send up stalks until the second or third year. There is a great difference in varieties in this respect. *Adolphe Rosseau* and *Mikado* seem to be either very slow, or else refuse to respond. Last Fall a root of some other variety, not as large as a lead pencil, developed an eye in a month's time when I held it in damp moss for later planting.

The crown material in an old clump may extend down as deep as six to ten inches, and of course there is no harm in planting all blind roots which might possibly have some crown material. But I never plant a root which I am sure has none. Deliberate cutting of divisions without eyes is not recommended, unless from very old clumps, say over seven years.

BY PLANTING these roots three or four inches apart, very little space is used, and the plants obtained may be counted clear profit. They should be in soil that is very well drained, and should never be allowed to suffer from drouth, which they cannot stand as well as a full sized plant does, being deficient in roots often in proportion to top. As new shoots may appear later in the season than on a regular plant, the soil should not be cultivated to any depth, or new shoots may be broken off, and this will often kill these scraps while making a supreme effort to start.

ALL of the above applies to the common or Chinensis Peony. The Officinalis family is entirely different. The root system consists of a clump of tubers like sweet potatoes or Dahlia roots, fastened to a central stem or crown, from which the eyes are put forth, and which may be divided like any other Peony. But one can also plant one of the separate tubers with no crown material attached, and usually the second Spring it will send an eye out of the side of the tuber, and will eventually make a regular clump. I do not know whether this method yields more increase than to divide in the regular way. In some respects the Officinalis varieties are not as vigorous as the Chinensis, and I would advise caution in any operations on a considerable scale.

Raising Seedling Peonies

About fifteen years ago, when I began to raise seedling Peonies, my collection was small but I had several good varieties. I found Peonies easy to cross, which is not the case with Irises. I recorded my crosses with the hope of finding an ideal one. I did not expect colors to breed true, but I found later that they will do so to a certain extent. The yellow color in Peonies probably does not breed true. My seedlings of *Primvere* X *James Kelway* were mostly white, the majority had a weak, top-heavy stem, a fault of *Primvere*. Poor qualities of the parents are the first to be transmitted to the seedlings, and if one is breeding for an ideal he must select parents nearest to that type. My objects were large flowers on tall and strong stems, so I selected *Mons. Jules Elie* and *Mlle. Rosseau* as parents. The seedlings came fully up to my expectations, they had large, healthy foliage clear to the ground, strong stems, and vigorous growth. Many had double flowers and some of very large size. The percentage of good varieties was larger than in any cross I have tried. With the hope of producing early blooming varieties I have crossed an early blooming Chinese variety with the species Decora Elatior. The latter blooms about two weeks ahead of the other and I had to force the Chinese variety for the purpose. *Festiva Maxima* and *Le Cygne* hardly ever produce seed. I open the flowers and look for pistils. If I find one with a perfect stigma, I cut away the center petals and apply pollen. After a few days they must be pollinated again and some seed will form.

In trying for red varieties I used the pollen of *Mons. Martin Cahuzac.* I selected strong growing varieties for seed parents, including the old *Duchess d'Orleans*, a poor variety, producing large seed pods, but having strong stems. I have used *Mons. Jules Elie* also, but in all instances the seed does not germinate well, and I attribute this to *Cahuzac*, which is a poor grower, subject to leaf spot and other diseases. Whether the climatic conditions of Nebraska are responsible for this, I do not know, anyhow it is not a strong grower with me. The seedlings are somewhat slower in growth and it takes a year longer for them to bloom. There are many reds, some quite dark too, but in most instances the plants are lacking in constitution. So far I am not very enthusiastic about my work with *Cahuzac* and am beginning to believe that better reds have to come from other sources. My experiments with Officinalis *Rubra* X sinensis failed. The seedlings invariably blighted before reaching the blooming stage.—H. P. SASS, Nebraska, (In *Minnesota Horticulturist*)

Tuberous Begonias for Porch Planting

Odds and Ends

BY R·S·STURTEVANT

My Plan and Yours

I RECENTLY had the pleasure of attending a lecture on "A plan for Washington, D. C." It seems that we each and all are involved because all power of decision is vested in the Congress which we elect. The fate of any proposition which had to go through the red-tape of some eight or more committees and executives, reminded me of some of my little difficulties in carrying out a proposed change in my front lawn. The outskirts of Washington apparently are given up to hit-or-miss development and I know that the adjuncts of my lawn are undeveloped (from some points of view I may be better off). Its public-spirited citizens may have to refer to you for congressional action, but I, in my small way had varied relatives and friends to be considered as the area was most conspicuous.

I am afraid this will be a warning rather than the report of an accomplishment but perhaps a warning will be helpful.

Firstly, my bit of lawn was the only ungardened space remaining and despite the poor sod it was a restful place to look out upon from the porch or dining room. Theoretically every principle of design demanded just such a lawn, but my petty need was a garden, hence the difficulty; as one relative at least did not like the garden idea. He, however, was retired to the background and the planning started. There is an axiom that a garden in close vicinity to a house should be visibly connected therewith, on axis perhaps with an entrance. Very good. There is a broad step and a broad view window beyond, ideal terminus for an axis but unfortunately the house is set at an angle with the road and any such tee-square line shortly hit the boundary fence. In the other direction one looked down a long Peony-bordered path, and curiously enough as one walked up its length, house et al. seemed to be well centered until one got quite near. I considered all these points of view from every angle, and then began with white string and innumerable stakes to try things out. I should like to have used a limber hose as a marker but there did not begin to be enough.

SHORTLY I discovered that a straight approach nearer the step, than a good fifty feet, made the angle of house and axis most displeasing. Then I tried locating a center about which I might curve or square the beds and thus interrupt the view. Even a wire stake at any possible center seemed only to enhance the lack of balance. Screening that blessed house cut out too much light from both house and garden; intricacy of beds merely exaggerated things to a meaningless extent; and finally in desperation I split my path in two curving sweeps, blunted the end of the enclosed triangle, and laid my strings yet again.

As I advanced up the long straight path my attention was more and more distracted from the house by the smooth green of a path that seemed to vanish just around the corner; and then, when I could see its reach, I was again distracted by the center dial with its odd wedges of plantings; even by the interest of the planting itself. Axis and house were still at variance, but camouflaged by other interests which led the eye in other directions.

This to an extent solved the primary problem, at least I expect some attractive pictures when things get established this coming season, but I had now to consider the beds and what should go in them. For convenience a flower bed should not be much over six feet wide, and here I had made things some forty feet long, and varying in width from four to fifteen feet. The outer boundaries, by the way, proved to be equally unfortunate in that they formed neither a square, a circle, or a rectangle. Again I took to string and found two balancing sites for minor paths only, so that much of my weeding will have to be done from stepping stones dropped inconspicuously at convenient intervals. Squared flags placed as an integral part of a design are a delightful variant and often make big beds really practical but in this case they were strictly necessities.

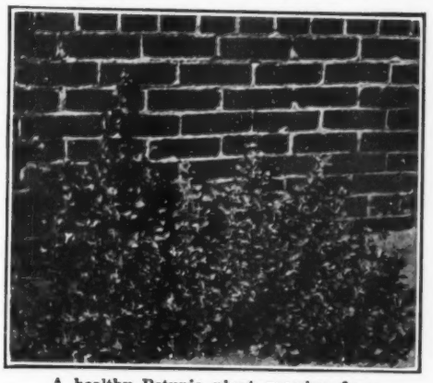
MY PLAN completed, (I cannot honor it by the term design), I was ready for my planting and thankful that in that at least I should be free from assistance. As you may imagine all this was done in a rather war-like spirit over a period of some hours. There was Sister, most helpful in holding the string and most scornful of the resulting patterns; there was Nephew who from his abysmal ignorance of design vouchsafed innumerable suggestions; and there were visitors and neighbors with varying amounts of intelligence. It was not a pitched battle but a series of engagements wherein one contestant after another retired for a needed rest and then returned with fresh vigor to the attack and in the end it was a drawn battle. I held the field but it was a victory without peace, as each new visitor inspects the results with tongue in cheek.

Why burden your eyes? you say. So that you will avoid like difficulties. Locate your house with reference to the street and the lay of the land. Plan or get a landscape architect, (a real one), to plan your grounds. With your house as the center, place your walks and hedges, your out-buildings and trees, in proper relation thereto, and though you carry out but a tithe of all these plans at first, put them on record in the first joyful years when to own your place is still a novel joy. That is the time to plan, and even with a pretty elaborate layout you will find that there are infinite details that will keep up the interest from year to year, and which will in themselves clothe the framework which, by your foresight, you have provided.

L'Enfant made a plan for our capital city 120 years ago but it included only the central portion of the present Washington, and with the red-tape any further planning seems most difficult. In *your* capital, the home, you may plan to the furthest limits in the beginning, and on your sole responsibility improve the picture as the years go by.

Flowers in Solid Concrete

When they can get a root-hold, there are certain flowers that by their natures are capable of extracting enough food material from the soil to develop into thrifty plants. Many wild flowers, like Three-seeded Mercury, Yellow-wood Sorrel, Prostrate Knotweed, Dandelion and Milk Purselane are experts at performing such stunts, but of the cultivated flowers, none can excel the Petunia. I have witnessed Petunia seeds planted in concrete crevices so small that they escaped the eyes of the casual observer, and yet through the diminutive opening the plants were able to develop a root system capable of taking up an ample supply of raw food material so that they grew into hardy plants, and produced a gorgeous display of flowers, even as bountiful and luxuriant as those that grow in well fertilized beds and boxes.



A healthy Petunia plant growing from a small crevice in a solid concrete wall

Even in places where it seems impossible to grow flowers, if one will choose the proper variety, it is possible to produce what seems to be a miracle in the flower world.

ROBERT SPARKS WALKER

Wayside Ramblings

RAPID PROPAGATION OF PEONIES

I noticed in Mr. Sheward's article on Peonies in THE FLOWER GROWER of Nov., 1923, he calls attention to a quick way of propagating the plant which he claims was discovered about three years ago.

The method described is not new, having been in use by various growers for many years. At one of the meetings of the American Peony Society, eight or ten years ago, the practice was the subject of considerable discussion and was criticised very severely. The late Rev. C. S. Harrison, a noted Peony grower of York, Nebraska, was present and took part in the discussion. He thoroughly condemned the practice, claiming that plants produced in that way were blind and the cause of much disappointment to purchasers.

The substance of the discussion may be found on record in the reports of the Society.

There seems to be ample evidence that plants can be produced in that way, the "hilling up process" having been alluded to, occasionally, in a desultory way, almost from the beginning of the Society, but so far as I know there is no evidence that any one has ever brought plants, so produced, to an actual flowering condition.

If, as it has been claimed, the method produces blind plants, the fact should be proven by actual experiment and the knowledge disseminated.

On the other hand if healthy blooming plants have actually been produced, that fact also should be made known.

Theories are all right so far as they go, but in cases like this they should be supplemented by actual experiment, and the facts established by deductions made from them.

It is very easy to see that plants grown from the little adventitious buds which form on the stems of an old plant, when subjected to the treatment mentioned, must be very small and weak to start with and it is fair to suppose that it must take nearly as many years to bring them to the blooming size as it does a plant produced from seed. If it is so, it may be this which has led many to pronounce judgment before the plant has had time to grow to the required size and strength to produce blooms.

Someone who has had actual experience and who has brought plants, so produced, to the flowering stage should come forward and make a detailed statement of facts derived from that experience and put at rest for all time this much discussed question.

According to Mr. Sheward's statement the process was new to him about three years ago and it would be interesting to know what observations he has made in regard to it since that time. In other words, can he say positively that he has actually produced flowering plants by that method? Or can he say that he has seen plants, propagated by others, actually in flower, which he positively knows were propagated in that way?

Undoubtedly there are others who have experimented along this line, who could throw more or less light upon the subject if they were so inclined. It has passed the stage of being a trade secret and it would benefit all concerned if all the facts connected with the process could be collected together and published.

A. H. FEWKES

EDITOR'S NOTE:—

Peony growers who have had experience with the method of propagation suggested in the Sheward article referred to will be doing a kindness to other Peony growers by reporting the result of their work for publication in THE FLOWER GROWER. If it is a fact that this so-called rapid method of propagation is no good, as reported by Mr. Fewkes, publicity should be given to the results of actual trials. If the method actually results in more rapid propagation and is successful, this fact should also be made known.

THOROUGH WATERING NECESSARY

There is no question at all but that a great deal of harm is done by inadequate watering, and by "inadequate" I mean, not putting on water enough.

While it is impossible to lay down any fixed rules for watering, on account of the great difference in soils and climates in this big country of ours, yet there is one broad rule that is pretty safe to follow: "Wait until your garden needs water and then water it thoroughly."

Now by "thorough" watering I mean, to soak the soil so that the water penetrates down *at least* six or eight inches. This will send the roots down, whereas shallow watering pulls them up toward the surface.

The reason so many people don't put on enough water is that they use lawn sprinklers, which distribute water very fast. After letting a sprinkler of this kind run for a short time the water stands in puddles and the user naturally thinks that the ground has had enough water. The water should be put on slowly, and evenly, and thoroughly; and if this is done plant life will respond.

Our company has also found that it is much better to water in the late afternoon and evening of hot days. On moderate days most plants can be watered in the sunlight without any damage whatever.

It has been especially interesting to watch, in the development of our business, the change of attitude amongst the gardeners on private estates, toward artificial watering. It used to be that a great majority of these men (who are skilled growers) were apt to look askance at overhead watering. Now they have found that it is the best friend they have, for it does a better job of watering than anyone can do by hand, and at the same time saves huge quantities of time.

P. H. BRIDGE

BLOOMING TIME FOR EARLY GLADIOLI

I notice in the January FLOWER GROWER that lists of blooming dates of early varieties are wanted. The following is my list for the first ten to bloom, all planted on May 29 to 31:

Jewel, sixty-four (64) days
Wilbrink, seventy-two (72) days
Le Marechal Foch, seventy-four (74) days
Prince of Wales, seventy-five (75) days
Eros, seventy-six (76) days
Gen. Joffre, seventy-seven (77) days
Scarlano, seventy-seven (77) days
Anna Eberius, seventy-nine (79) days
Elf, seventy-nine (79) days
Maine, eighty-one (81) days

G. W. THACKER

SPORTING OF GLADIOLUS SNOW GLORY

Talking about the sporting of Glads; I had a very unusual experience along that line this past season with *Snow Glory;* it happened this way: What few bulbs I had of the variety, big and little, were planted together. These bulbs were all from the same stock, a single bulb which I purchased from Mr. Kunderd. The first spikes to bloom came true, but, then along came a spike that started all right, and the first floret to open was a true *Snow Glory*, but the second one was very different as to throat markings, which were crimson instead of the iris blue. It was novel to say the least. Then the third blossom opened, and this one while almost true had a little crimson in it. The following blooms, clear to the top, had the crimson lines and feathers in the throat. This sporty spike was quite gaudy for *Snow Glory*, "I'll say it." Then came another spike from another bulb in the lot which did not show a single floret true to name; that is as to throat markings. As to form it was true, but it could easily have been taken for a rogue with its crimson markings. These two sports were tagged and bulbs with their bulblets are segregated and will be planted separately next season to see what comes. This is the first time in my Glad experience that any variety in my garden has shown any such sporty proclivities; and I cannot understand the exuberance of spirit of these two bulbs, with the other bulbs of *Snow Glory* alongside of them; and so sedate.

F. H. WILLIAMS

THE CLOSED GENTIAN

Of all the wild flowers that have come and gone during the past Summer, the late Gentians have a peculiar charm for me, especially the closed Gentian. I remember the first one I ever saw a number of years ago, which a young friend brought me as he came in from a hunting trip. "There is a flower," said he, "I thought you would like to see; it is the closed Gentian." I had read of this plant but never seen one before, and I immediately sought my botany and read up all I could find regarding it. It is of the most intense indigo blue and one of the most interesting of all our wild flowers.

Every Autumn I watch for them but am not often rewarded for my search as they are rare. The plant does not respond readily to cultivation, as experts who have vainly tried to woo it from its wild haunts tell us. There is something almost pathetic about the closed corolla that no amount of sunshine, gentle breezes or sparkling dew can coax to unfold. It reminds one of the patient look that the hopelessly blind have, and when I find the flowers I always gather them and place them in a vase where I love to watch them as long as they keep fresh, which is often a week.

MRS. ELLA F. FLANDERS

GLADIOLUS—*JACOBA VAN BEIEREN*

A reader of THE FLOWER GROWER writes that whereas *Jacoba Van Beieren* has been described as a purple, yet having grown it, he has found that it comes true to the originator's description of true violet, and that comparatively small bulbs throw very tall spikes.

THE DAHLIA IN MISSOURI

Why is the Dahlia so little known in the middle west? After years of Chrysanthemum shows, St. Louis last Fall put on its first Dahlia show, and it was a sensational success. The press commented on the surprise of visitors as they surveyed a bewildering array of lovely aspirants for beauty honors of which they had had no previous conception. So it would appear that the Dahlia still has a large territory to conquer, but it has only to show its charms to win instant allegiance.

Two years ago I planted my first named Dahlia tubers; one of *Mina Burgle* and one of *Gustave Doazon*. For some reason the first perished, but *Doazon* grew vigorously, and as its great dusky flowers began to expand to their full diameter, a general chorus of wonder and admiration followed. Stirred by this revelation I last year set out more than thirty varieties, some of them single specimens, others, less expensive, by the dozen. They were planted in good garden soil, eyes all in one direction with a stake next the eye for future support. Single specimens were placed in small beds, while the more numerous were lined out in rows sixty yards long. In September the plants began to stage their exposition of beauty in a marvelous variety of color, size and form. One by one new faces arrived. Nearly every day was celebrated with the introduction of a new visitor, vying in looks with those already present. There was a constant series of startling surprises so that interest was always on tiptoe.

One day several members of the town's Civic Improvement Association called and viewed the Dahlia display. The result was that a big show window of our daily paper on a main street was filled with vases of the finest Dahlias. The effect was immediate. Visitors began to arrive, singly and in groups, until it became a regular duty for some one to act as guide. The single specimens would first be inspected and then, proceeding some distance around a grove, the long rows would burst upon eyes quite unprepared for this new vision of beauty. Merely to stand and look down those rows all brilliantly painted in many colored hues, was an aesthetic feast and quite indescribable in sober language.

The next development brought a satisfaction of a more solid kind. Visitors wanted some of those wonderful flowers to take home and we began to sell cut flowers with the comforting reflection that we were going to be reimbursed for the cash outlay for tubers, made last Spring with considerable hesitation. In addition to that we received orders for roots for next year's planting. All in all our first Dahlia season proved a great success.

L. R. JOHNSON

GLADIOLUS—E. J. SHAYLOR

The recent article telling of earliness of *Shaylor* reminded me of the very remarkable results I had with this variety in 1922. I purchased a lot of three dozen from a seed store—rather small and dry too. They were planted the ninth day of July in very dry soil and given a small amount of water to start them. Right at once they came through and made wonderfully rapid growth. Late in September following they began blooming and every bulb gave me a fine bloom spike. 1922 was the driest year known in this section.

During the past season I planted out over one hundred and fifty thousand bulbs and bulblets of *E. J. Shaylor*, and they gave a very fine lot of flower spikes that had never one crooked bloom stem. These blooms were many of them used for decorations at Tacoma Hotel and proved one of the very best we ever tried. This sort is exceptionally fine under electric lighting and a wonderful keeper, too.

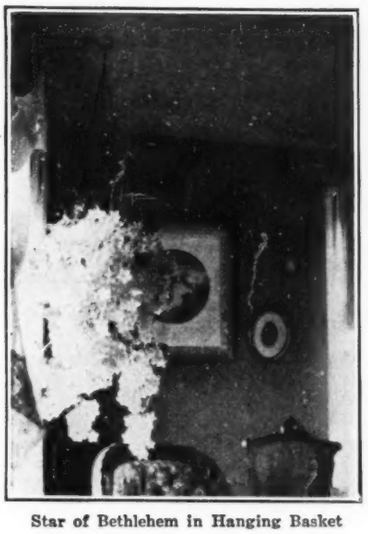
The coming Spring I will give the variety a test at forcing. I shall make this test along with other varieties OUTSIDE in a frame heated with hot water heat and the frames covered with the new "canvas glass." Climatic conditions here are not at all severe which makes this plan well worthy more extensive trials.

S. L. HARPER, (Wash.)

STAR OF BETHLEHEM

I have been a reader of THE FLOWER GROWER for over a year now and have watched for a word about the house plant, The Star of Bethlehem.

To me it is one of the most beautiful plants in existence. Its beautiful light green foliage, and its mass of white star-like blossoms, which last for months, not only makes a flower lover take a second look, but stop for close inspection.



Star of Bethlehem in Hanging Basket

CAROLD F. HALL

BIRD BATH

Bird baths are mentioned in your valuable paper. I would not be without one, and I have no trouble in attracting the birds to quite a public place. There is thirty feet of lawn to the south of my cottage. A sidewalk runs in front. Eight feet back from the walk, in the center of the lawn, I sunk a post to about three feet above ground; laid up a rockery about the post five feet in diameter with Ferns, and vine Nasturtiums; and on the top of the post I placed a large red flower pot saucer, eighteen inches in diameter, which is kept filled with fresh water. Every evening bread crumbs are scattered about the rockery. The birds come, and the baby birds are taught how to bathe. One Robin thought he owned the bath, and tried to keep the others away, but he could not do it. An old lady who is shut in, sat by the window and watched the birds all day, with the long hours shortened by the play of the birds. A bird bath by all means, for the pleasure of watching the birds; for the protection to the garden; and for the sake of the birds themselves, who always raise their heads in thanks as they drink to your health.

E. MERLE BIXBY

A DAHLIA EXPERIENCE

The article under title of "Stunted Dahlia Plants" in the December issue of THE FLOWER GROWER was read with a great deal of interest. In 1922 I bought a large Dahlia tuber of the variety *Dr. H. L. Tevis* which made two sprouts. As it was late in the season I allowed both sprouts to grow and two strong healthy plants resulted. Several large blooms were cut and several large buds and undeveloped flowers were killed by frost. At digging time I found that the tubers were long and slim and in the Spring of 1923 there was only one alive and that was the original one.

Profiting by what I had read, I cut off and threw away two-thirds of the tuber. Only one sprout grew on the tuber and it made a healthy plant between three and four feet tall.

The flowers produced were as large as those of 1922 and five plump medium sized tubers is the increase. If the Mother Tuber is alive in the Spring, shall plant it as an experiment.

I. W. HARRISON

RESULTS FROM LARGE GLADIOLUS BULBS

About large bulbs. All growers with much experience expect to get few bulblets from large bulbs; and not only that but the bulblets from large bulbs, often large, do not germinate nearly as quickly or certainly as those from small bulbs—say three-quarter inch.

In buying a new variety I feel defrauded if I get very large bulbs but try to offset that somewhat by cutting the bulbs. Large bulbs of the Primulinus varieties I cut, often, into three or more pieces and sometimes get two new bulbs from a piece. Occasionally one of the pieces will make only a small new bulb, but that sometimes happens even with a whole large bulb.

GEO. S. WOODRUFF

FIVE TEETH VS. THREE TEETH

Can a gardener do more work in a given time, and better, with five teeth in his cultivator than with three? In a half-hour perhaps so: in an eight-hour day not so. A man can do more work in a day with a tool of smaller capacity which does not make him suffer fatigue. Also he will have better control of the lighter combination.

I hire men to work in my garden, and I find it pays to use tools light to manage and to handle. In my five-tooth cultivators I use never more than two teeth, and for work close to the row I use only one. With the common garden hoe, I find that, the smaller it gets worn down, the more work it gets done. The hoe that did more work to the hour for me than any other was one that got worn nearly to nothing, and one side of that broken off. It does not pay to overload a horse, nor a man either. A heavy tool may seem light for a short half-hour, but by noon it is a heavy drag, and a tired worker makes poor headway.

B. C. AUTEN

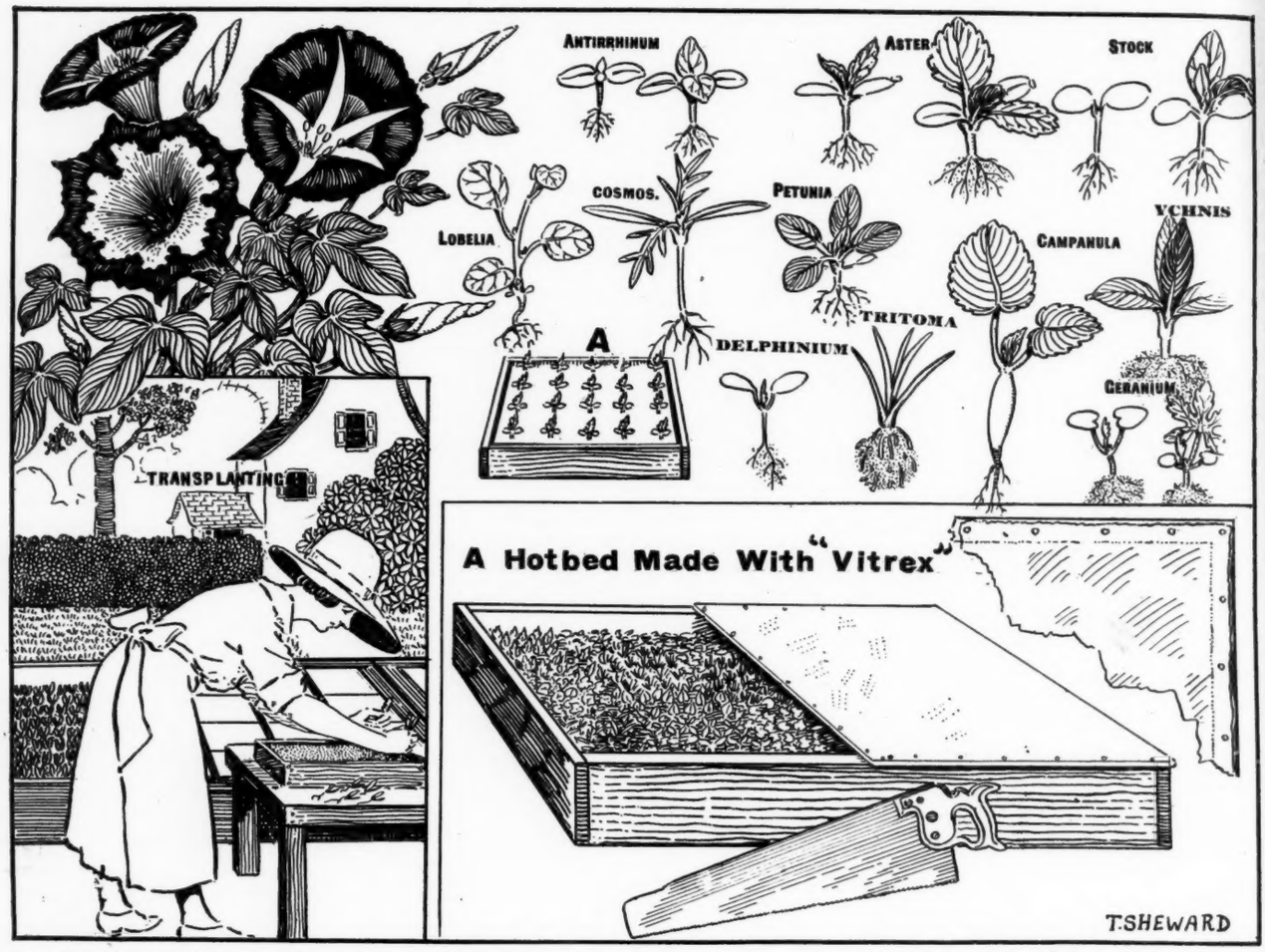
EDITOR'S NOTE:—
From my experience I am not prepared to agree with Brother Auten on the five tooth cultivator unless he is familiar with a different five tooth cultivator than I am familiar with. Those who have had experience with using a lesser number of teeth than furnished with the tool, may have some further suggestions to offer.

How to Grow Annuals and Perennials

BY T. SHEWARD

(Copyright 1922, by T. Sheward)

THE diagram shows seedling annuals and perennials ready for transplanting. It is not too late now to sow such things as Asters, Stocks, Dianthus, Nicotana, Phlox Drummondi, Zinnias, etc., if sown at once. A hotbed could be made up now and used later for growing Cucumbers or Melons in Summer. The diagram shows how to make a hotbed with Vitrex, the new glass substitute, or cheesecloth would do as well. This is just four planks nailed together with six inches of manure inside to make enough heat to grow the seedlings. Place four inches of rich soil over the manure, then sow the seeds. Water well after sowing and cover with the sashes, which are made with 1 by 4 with Vitrex tacked onto them. This is a good place to start seeds of hardy plants, then when these are planted outside in May, a Cucumber or Melon can be set under each sash for a Summer crop. Good hardy plants to sow now in the hotbed would be: Aquilegias, Canterbury Bells, Delphiniums, Lychnis, Polyantha, Orientale Poppies, Pyrethrum, Tritomas and Sweet Williams. A few house plants could be grown from seed now by starting such things as Cyclamen, Primulas or Cinerarias in the frame.



Effective Methods of Liming

To be effective, lime should be as thoroughly mixed as possible with the plowed portion of the soil. This is usually most economically done by broadcasting lime on newly plowed land and mixing it with the soil by the disking and harrowing necessary to prepare the seed bed. Most of us advise against plowing lime down. In theory, a portion of the lime application might be made before plowing and disked into the soil and the remainder applied after plowing as above suggested. There is no evidence, however, showing that this would be economical. The time of application or the season of the year is immaterial, and in farm practice it will often be determined by the distribution of farm labor. The place in the crop rotation should be just preceding the crop most responsive to lime, providing it is convenient to apply at that time and the preparation of the land will provide for proper mixing of the lime with the soil. Where this is not possible, it may be applied for a crop earlier in the crop rotation.

While top dressing with lime is not generally advised, it may be justified on land already seeded to clover, especially when the success of the clover will be largely determined by the lime. For top dressing, finely pulverized limestone may be better than freshly burned lime in spite of frequent statements to the contrary. Freshly burned lime used as a top dressing is subject to puddling, in which case the lime will cake and remain on the surface for a long time.

The old method of spreading lime from small piles distributed over the field by means of shovels is not to be recommended. Such distribution is too uneven to expect the best returns from it. Nothing is better for spreading lime than a lime spreader made for the purpose. One which will provide for a wide range in the rate of application, will not clog, and will spread uniformly is to be recommended. The lime should be so placed in the field that it will be accessible to the lime spreader and provide for the minimum amount of handling of the lime.—*Abstract from article by F. D. Gardner in the Journal of American Society of Agronomy, May, 1921.*

Timely Suggestions for March

BY BERTHA BERBERT-HAMMOND

(Southern New York)

Oh March that blusters and March that blows
What color under your footsteps glows!
Beauty you summon from winter snows,
And you are the pathway that leads to the Rose.

Celia Thaxter

IT SEEMS to take the bluster and variable weather of March to wake up the many beautiful things that lie dormant beneath the soil. Only a few warm spring-like days are required to bring about the annual miracle of the resurrection of plant life, and before we realize it, the brave Snowdrop, Crocus and other harbingers of Spring will be pushing their way up through the soil, often while the ground is still covered with snow.

Some outdoor garden work may be done during this month, such as planting seeds of Sweet Peas as soon as the ground can be properly worked. Some perennials may be divided and reset, and some varieties of hardy shrubs may be planted when the soil is dry enough. Protect young evergreens from sun scald. Complete any pruning that is to be done, before the sap begins to flow. Paint any large wounds made by pruning.

See that all garden tools are in readiness, and provide if possible one of the up-to-date devices with attachments that make it possible to save the time and energy of the gardener and make the work less like drudgery. Put arbors, trellises and garden furniture in good shape. Get hotbeds and cold frames ready for the sowing of seeds or for the reception of seedlings that have been previously started. Provide mats for the protection of the plants in the frames.

Examine house plants and repot at this time all those that require it, so as to have this work out of the way before the outdoor garden work becomes pressing. Select clean pots a size larger than the one that has been in use, provide for adequate drainage, and firmly pot the plant so that there will be left at least an inch of space between the top of the soil and the rim of the pot for convenience in watering or applying liquid fertilizer.

In moist sand start cuttings of Abutilon, Geranium, Verbena, Lántana, Fuchsia, Heliotrope, Coleus, Marguerites and other plants. Do not allow the cuttings to wilt at any time. Look after cuttings started last month. If they have rooted they may now be potted. Pot Chrysanthemums, Carnations and the tuberous variety of Begonia, and as they grow pinch off some of the shoots to assure the production of shapely, bushy specimens.

A large number of seeds may be started in shallow boxes indoors the latter part of this month and if given regular, intelligent care will produce sturdy seedlings by the time the weather is settled enough to allow them to be transplanted to the outdoor garden. Pansies may be had in bloom by May or June by starting the seeds now. Aster, Nicotiana, Verbena, Balsam, Stocks, Marigold, Zinnias, Cockscomb, and other seeds may be sown for early flowering.

Houseplants responding to the increasing warmth of sunshine will make a more rapid growth of foliage or of flower. They will therefore, require plenty of fresh air and possibly an occasional application of some sort of plant food. A few drops of ammonia added to a quart of water will help to "tone up" a plant that has lost vigor from rapid growth or excessive bloom, but like all plant stimulants, it should be used with judgment.

Azaleas, Cacti, Hydrangeas, Gardenias, Pelargoniums, as they make more growth, will require more liberal watering, but here again one must be cautious not to supply more than the plants require, or great harm may result. Roots standing constantly in water or soil that is very moist have a tendency to rot. This is especially true of succulent houseplants like Cacti. Water only when the soil in pots is dry, but then water thoroughly.

Look after Hyacinths, Lilies, etc., that are being grown for Easter bloom. If bulbs are backward for the season place them where there is more light and heat. Callas, Amaryllis and bulbs about to come into bloom will respond to occasional applications of plant food. Such bulbs that have finished blooming should be ripened and stored away until outdoor planting time. Though useless for indoor forcing they will bloom nicely in the garden after a year or two.

To look well the shelves and plants in the window garden must be kept trim and clean. Nip off ungainly shoots, remove faded flowers and wash the foliage at intervals. Syringing plants is beneficial as it removes dust, discourages pests, and improves the health and the appearance of the plants. Introduce moisture into the atmosphere of the plant room by means of pans of water on radiator, on stove or on register.

Though it is still too early to remove all of the mulch and other litter used as a winter protection, one may begin to clean up the garden by removing those things that are no longer needed and that do not add to the tidy appearance of the garden. The lawn may be raked and burned over or rolled if necessary. Holes may be filled up and bare spots re-seeded and some sort of fertilizer used. Clean up wherever it is possible.

Delphinium Belladonna

THE Hardy Larkspur, Delphinium Belladonna, is without exception one of the finest and most desirable of all the hardy Larkspurs. In cultivation it grows from three to four feet in height and is of a loose growing habit. When well grown and properly cared for it blooms freely and continuously from July far into the autumn months, and is considered by many to be the best blue flower for cut flower purposes. In cultivation it should be given a very deep moderately enriched soil, an open sunny situation, and sufficient space in which to properly develop itself. If the flower spikes are cut back immediately after blooming a second crop of smaller flowering shoots will appear in August and continue until destroyed by frost. The plants should not be allowed to remain longer than three years in one place undisturbed, but after that time taken up carefully, separated and replanted; and this should be done in the Spring just as the plants start into growth. During the winter months a slight covering of evergreen or other branches should be given, and when this is removed in the early Spring, a top dressing of well rotted manure or bone meal will be appreciated, if carefully worked in around the plants.

This Delphinium is easily increased from seed which is freely produced, and should be sown in July or August on a nicely prepared border, in a sheltered situation. Sow thinly and when the plants are large enough to handle let them be transferred to another border, similarly prepared and placed in rows about four inches apart each way and here they can remain until transferred to the mixed flower bed or border.

The late Maurice Fuld in an article on Delphiniums in speaking of D. Belladonna says it is the choicest of all Larkspurs. Fully developed plants attain a width of two feet and a height of four or five. The graceful thin spikes are lovely, dressed with immensely large single heavenly blue flowers, which are enhanced with a white bee like center. We can strongly recommend this beautiful sort.

CHAS. E. PARNELL

The Editor has planted Gladioli in Northern New York as early as the nineteenth day of March (his birthday), but he does not expect to do that this year. The Gladiolus is one of those flowers that one feels he can take chances with as they do not freeze easily and very early planting sometimes means earlier bloom.

Victoria Regia (Royal Water Lily)

(From Bailey's Cyclopedia of Horticulture)

VICTORIA (in honor of Queen Victoria). Nymphaeaceae. Royal Water Lily. The great Water Lily of the Amazon, sometimes grown in large aquaria.

THIS remarkable aquatic genus may be recognized by its huge round floating lvs. often 6 ft. or more in diam., with the margin turned up at right angles to the water surface to a height of 3-8 in., making a basin-like object. Fls. (12-18 in. across) nocturnal, opening on two successive days about 5 P. M. and remaining open until the middle of the following morning; the first evening the inner floral lvs. remain loosely closed over the stigma, the fl. is creamy white, and exhales a delicious fragrance somewhat like pineapple; the second evening the floral lvs. spread wide open, and the color changes to pink or red; ovary inferior, densely prickly, and surmounted by a short broad tube, on the sides and summit of which the floral lvs. are situated; sepals 4; petals 50-70, obtuse, oblong-ovate to sublinear, rather thin and delicate in texture; staminodia about 20; stamens 150-200, linear-lanceolate; paracarpels about 25, forming a ring of thick fleshy bodies between the stamens and the styles; carpels 30-40; stigma forming a broad basin-like depression, 2-2½ in. wide, in the midst of the fl., with a central conical continuation of the floral axis, the basin filled with fluid on the first evening of opening; carpellary styles broad and fleshy in the lower part, produced upward to a fleshy subulate incurved process about ½ in. long: in fr. all of the floral lvs. have decayed away, leaving the basal tube of the torus at the top of a great prickly berry, half the size of one's head; seeds greenish or brownish black, about the size of a pea.—The genus is represented by two well-defined species, inhabitating still waters of S. Amer. from British Guiana to Argentina.

In its native haunts victoria grows in 4 to 6 feet of water, in great patches miles in extent, and is perennial. The tuberous rhizome stands erect in the mud, where it is anchored by innumerable spongy roots which spring from the bases of the leaves in groups of ten to thirty or forty. The tuber may be as much as 6 inches in diameter and 2 feet long. It decays below as it grows above. The leaves are arranged in 7 to 18 order, the flowers being extra-axillary. Each leaf after the first seedling leaf has a broadly ovate fused pair of stipules, these organs serving to protect the apex of the stem. The petioles and peduncles are terete, 1 to 2 inches in diameter, covered with stout fleshy prickles, and traversed internally by four large, and a number of smaller air-canals. The petioles attain to a length much greater than the depth of the water, so that the leaves can adjust themselves to changes of the water-level, though Banks states that they may be completely submerged in times of flood. The gigantic leaves are covered beneath with a close network of prickly veins, the larger of which project an inch or more from the leaf-surface; the tissues are full of air-spaces and -canals, thus buoying up the mass of cellular matter. Besides many stomata on the upper surface of the leaf, which open into the air-chambers of the mesophyll, there are countless tiny depressions, in each of which one can see with a hand-lens that the leaf is perforated with a fine hole; these holes were called by Planchon "stomatodes" (F. S. 6:249). He considered them to be useful as air-holes to let out gases which, rising from the water or mud, might be caught in the deep meshes of the netted veins on the under side of the leaf. It is also to be noted that, in spite of the cup-like form of the leaves, water from rain or other sources does not remain on the surface; it doubtless runs down at once through the tiny perforations. This would be an indispensable protection against fungi and algae, and for the function of assimilation.

A single leaf, by its buoyancy, may sustain a weight of 150 or 200 pounds. Gurney at Tower Grove Park, St. Louis, covers the leaf with a large round quilted pad, then lays on an equally large frame of thin wooden slats, and on this a person can readily stand, as if in a boat. Not the least remarkable feature of these leaves is their rate of growth. Caspary found the maximum growth in length to be about one inch an hour when the leaf is just expanding; the surface increases four or five feet square in twenty-four hours, and a plant will produce in twenty-one to twenty-five weeks 600 or 700 square feet of leaf-surface. A great development of heat has been observed in the opening flowers of victoria. About 8 P. M., when the anthers are shedding their pollen (in second-day flowers), the stamens may reach and maintain a temperature 10° F. above that of the surrounding air.

Though doubtless known to Spanish traders and missionaries, and certainly of use to savages as food in early times, victoria was first noticed botanically by Haenke in Bolivia about 1801; but he died in the Philippines without recording his discovery. Bonpland, the companion of Humboldt, also saw it near Corrientes, Argentina, in 1819, and in 1825 sent seeds and a full description to Mirbel at Paris. In 1832 Poeppig found it on the Amazon, and gave the first published account of it in Froriep's "Notizen" in November of that year, under the name of Euryale amazonica. D'Orbigny saw the plant in 1827 at Corrientes, collected specimens, and sent them with drawings to the Museum of Natural History at Paris. In 1833 he saw it again in Bolivia, and several years later published accounts of his find. Robert H. Schomburgk, finding it again in 1836 on the Berbice River in British Guiana, sent home specimens and figures from which Lindley in 1837 (published in 1838) established the genus Victoria and described the species V. regia. This name has settled on the northern species, while the one found at Corrientes was named in 1840, by d'Orbigny, V. Cruziana in honor of General Santa Cruz, of Bolivia.

The struggle to bring the "queen of Water Lilies" into captivity began with Schomburgk. He removed living plants from inland lakes and bayous to Georgetown, British Guiana, but they soon died. In 1846 Bridges obtained seed in the Bolivia locality, province of Moscos, and sent them in a jar of wet clay to England. Out of twenty-five seeds obtained at Kew, three germinated and grew vigorously as small seedlings until October, but died in December. In 1848 dry seeds were sent to England from the Essequibo River, along with rhizomes, the latter in Wardian cases; the rhizomes rotted, and the seeds refused to germinate. In 1849 an expedition from Georgetown succeeded in bringing back thirty-five living plants, but these all died. Finally some seeds were sent to Kew from the Demerara River in bottles of fresh water, by two English physicians, Rodie and Luckie. The first sending arrived February 28, 1849, and on November 8 a plant flowered at Chatsworth; the blossom was appropriately presented to Queen Victoria. From this stock Victoria regia was distributed to gardens in Europe, Asia, and America. Van Houtte, of Ghent, first flowered it on the continent, and Caleb Cope, of Philadelphia, was the earliest successful cultivator in this country. His gardener was the late Thomas Meehan. The first flower opened August 21, 1851. In 1852 John F. Allen, of Salem, Massachusetts, had a plant from seed of Mr. Cope's growing. This plant lived through four Summers and matured over 200 flowers.

The next notable importation of seed was sent by Edward S. Rand, Jr., from Para, Brazil, to Mr. Sturtevant, then at Bordentown, N. J. The resulting plants flowered in 1886 and, proving to be slightly different from the former type, were called V. regia var. *Randii*. It is doubtless the same form that was described by Planchon as V. amazonica, and retained with grave doubts by Caspary. In 1894 Mr. Tricker received from Europe seed of quite another species, which was provisionally named V. regia var. *Trickeri*. It is much more amenable to out-of-door culture than the older type, and has received a well-deserved popularity. Specimens grown at Kew from seeds sent by Tricker were regarded simply as garden forms of V. regia. Later investigation by Tricker and the writer brought out the fact that the stock came originally from Corrientes, Argentina, and that the plant is truly the V. Cruziana of d'Orbigny. Its far southern habitat (27° south) explains its hardiness. At Riverton, New Jersey, seeds that have wintered in an open pond produce plants which flower by the end of August. The large starchy seeds of this species are used as food in Paraguay under the name of Mais del Aqua, "water-corn." The form of victoria originally introduced from British Guiana had leaves entirely flat until the plant attained considerable size; then a low rim appeared. The leaf was deeply purple-colored beneath. V. Cruziana differs markedly from this. V. regia var. *Randii* approaches the latter; and Malme's recently described V. Cruziana forma mattogrossensis approaches V. regia in several details. Apparently the two species grade into one another in Matto Grosso, where the tributaries of the Amazon and the Parana rivers interlace.

HENRY S. CONARD

CULTIVATION OF VICTORIAS

AT FIRST V. regia was cultivated at a great expense in conservatories and tanks built especially for the purpose. Then it was grown in artificially heated ponds in the open air. The victoria is largely grown in private and public gardens throughout the United States at the present time, together with tropical nympheas, and in some cases without artificial heat, but this method of culture is uncertain and often unsatisfactory. V. Cruziana is by far the best kind for out-of-door culture. Moreover, it can be grown where V. regia fails

to grow, as it revels in a temperature of only 75° to 80°. Its introduction has been of great interest. It has stimulated the culture of aquatic plants in the United States, also in Europe where it is now largely grown.

The Victoria regia is now considered of easy culture. Its requirements are heat, light, and a rich mellow loam in abundance. The seed should be sown in February and March. The temperature of the water should range between 85° to 90° F. The seed may be planted in pots or seed-pans and placed in shallow water. A tank eight to twelve inches deep, having a metal lining, copper preferred, is very serviceable for seedlings and young plants. Where sufficient heat is not attained from the heating pipes, an addition can be made by the use of an oil-lamp. It is altogether unnecessary and unnatural to file or chip the seed to assist or hasten germination. The seedlings will appear in about twenty days, though occasionally a few may appear in ten days. These should be potted off singly into 2½-inch pots, using fine loamy soil. The water temperature for the young plants should be the same as directed for the seed-pots. As soon as the young plants acquire their first floating leaf they will doubtless be benefited by repotting. From the very beginning, as sprouted seeds, they should be kept steadily growing, repotting at intervals, until they are planted out in their summer quarters. As the young plants advance they will require more space, so that the leaves are not crowded and overlap each other.

To raise plants of V. Cruziana (V. Trickeri) is altogether a different matter. The seed will not germinate in a high temperature; 65° to 70° is sufficient. The seed may be sown in February, but there is great uncertainty as to how long one must wait for the seedlings to appear, and also as to what percentage of seeds will germinate. As soon as the seedlings appear they should be treated like seedlings of V. regia, except as to temperature, which should be kept as above stated for seedlings and small plants, and as the season advances may be raised to 75° to 80°. The rationality of the cool treatment here advocated is borne out by the fact that early in June quantities of seedlings appear in the pond in the open where a plant has grown the preceding season, the seed having remained in the pond during the Winter. Planting in summer quarters may be done early in June or whenever it is safe to plant out tender nympheas, that is, when the pond is not artificially heated. When it is desired to plant out in unheated ponds it is not safe to plant before the middle or latter end of June. The conditions of the weather, earliness or lateness of the season, locality, and the like, must all be taken into account.

The best results are to be obtained from an artificially heated pond, or pits in the pond specially constructed to start the victorias, these pits to be heated by hot water or steam and covered with frames and sashes. By this method plants may be set in their summer quarters early in May and heat applied until the middle of June, or rather a temperature of 85° maintained until the advent of summer weather.

Very gratifying results are obtained when the victoria is grown under glass, as it is thus grown in several places in the United States, notably at Schenley Park, Pittsburgh, and Allegheny Park; also at "Greystone," the estate of Samuel Untermyer, Yonkers, New York, also at many notable gardens in Europe. Plants grown under glass usually attain to larger dimensions, as they are protected against climatic changes and the elements, besides enjoying more of a tropical atmosphere. There is more than one disadvantage, however. Setting aside the costly construction, labor, and so on, it is by no means inviting even on a warm day to spend many minutes in such a structure. Compare this with a natural pond and its surroundings and a cool shady seat where these gorgeous plants may be viewed at leisure.

Whether grown indoors or out, these plants are only annuals, and seedlings are of necessity raised every Spring. They form no tubers as do the tender nympheas, or rootstock as do the hardy nympheas.

Few, if any, insects are troublesome on these plants. The worst is the blackfly or aphis. The use of insecticides should not be resorted to, as they are most likely to damage the foliage. The safest remedy is to introduce a colony or two of the well-known "lady bug." They and their larvae will soon clear off all the aphides without any injury to the plant.

WM. TRICKER

Vegetable Culture

BY DUNCAN MACINTYRE

In the immense wave of popularity which enveloped all classes of horticulture from the beginning of the twentieth century there was nothing more conspicuous than the increased attention given to vegetable culture; and particularly since the world war, with its lessons of necessity and economy, vegetable culture has moved forward with accelerated speed. The commuter who used to be engaged in beautifying his grounds in his leisure hours, now gives attention to his kitchen garden also, and has the same relative pride in growing a Cabbage as he would an Orchid.

To secure good vegetables, two things are necessary: suitable soil and good cultivation. The exposure of a garden should be South, if possible, and the soil should be enriched with barnyard manure to a depth of eighteen inches. If the location is damp, the ground should be underdrained by tile. Mark the garden off into squares for the convenience of cropping and make it a rule never to have the same vegetable in the same location two successive years.

It is a great advantage to have coldframes to start early vegetables and plants for setting out in the Spring. These are simply made and set the garden weeks ahead. The following planting table may be of advantage to the amateur in selecting his seeds and planting his garden to keep up a succession of crops:

BEANS, *Black Valentine.* Plant every ten days from April 1 to August 15. *Kentucky Wonder.* One planting and use beans when young.

BEETS, *Crosby's Early Egyptian.* Sow every four weeks from April 1 to Aug. 1.

CABBAGE, *Early Jersey Wakefield* for early planting; *Succession* or *Autumn King* for late crop.

CARROTS, *Scarlet Horn* for early. For succession make three plantings from April 1 to July 1.

CAULIFLOWER, *Early Snowball.* Same directions as for Cabbage.

CELERY, *Improved White Plume.* Sow in flats about April 1 and transplant to open when large enough to handle, final planting in trenches and spaded up.

CORN, *Golden Bantam.* Sow from April to July.

CHICORY WITLOOF. Sow in drills, and harvest in Fall similar to carrots, being careful not to let roots shrivel. Plant every week, twelve in butter tub in cellar, inverting another tub over to exclude light.

EGG PLANT, *Black Beauty.* Plant out about May 15.

ENDIVE (Batavian). Sow in July and blanch in Fall.

KOHL-RABI. Sow every four weeks from May to August.

LETTUCE, *May, King, Big Boston, Mignonette.* Make sowing every ten days from March to August 15.

ONION, *White Portugal,* in sets. Sow in March.

PEAS, *New York Market, Gradus.* Sow every two weeks from March to May.

PEPPERS. Plant out about May 15.

RADISH, *French Breakfast, Scarlet Turnip.* Sow from March to August 30.

SWISS CHARD, *Giant Lucullus.* Sow early in April.

SPINACH, *Long Season.* Sow early in March to May 15; continues to frost.

TOMATOES, *Crimson Cushion, Stone, John Baer, Ponderosa.* Plant out about May 15.

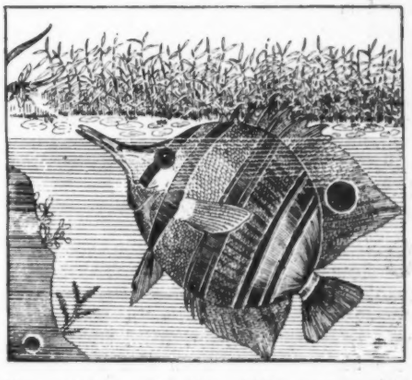
TURNIP. *White Milan.* Sow early in March and until May for succession; for Fall crop sowing can be made in August.

(Program of Westchester and Fairfield Horticultural Society)

A Fish that Carries a Gun

By T. SHEWARD

There is a curious fish, that inhabits the Indian and Polynesian seas, who feeds on flies and other insects which it shoots with a drop of water, blown from its elongated muzzle. It is called the Beaked Chaetodon, and is much esteemed by the Japanese who keep them in bowls of water, and amuse themselves by holding a fly on



the end of a slender stick, and watching the fish shoot it into the water, with wonderful accuracy. When the fish sees a fly resting on a blade of grass, or twig, it approaches quietly, with only its nose above the surface, and blows a drop of water at the fly, knocking it off its perch into the water, where it is easily taken by the finny archer.

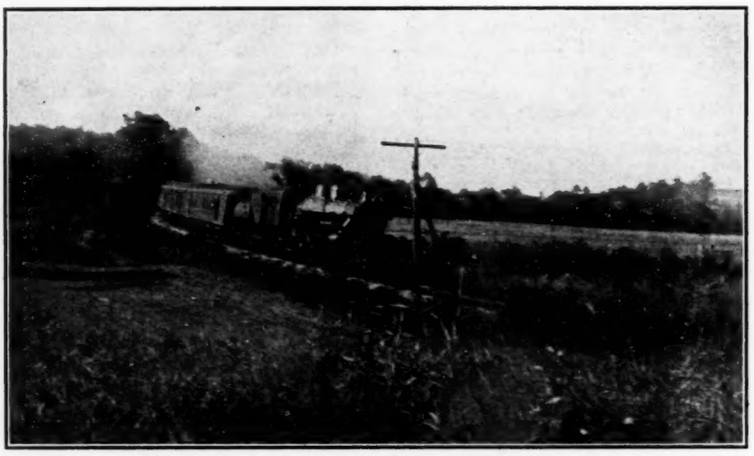
Studying Wild Flowers from a Railway Train

BY ROBERT SPARKS WALKER

I HAVE often wondered if it is practical to study wild flowers from a moving passenger train, and one morning I decided to make the experiment, and so I chose a fifty mile trip for the purpose.

Although I go out on frequent hiking trips for the purpose of studying birds, trees and flowers, until the time I made this trip, I had not made an effort to identify and appreciate wild flowers from a passenger train.

Anyone who is familiar with as large objects as growing trees will find no difficulty in identifying them from a moving train, and those growing a number of rods away, for their bark and foliage; also the shapes of their tops show up plainly from the moving train. But the plants that grow within thirty feet of the railroad track run together in an almost solid mass, and until the train checks its speed or stops still, is it possible to identify only the largest of them; but beyond that distance for several hundred feet, their colors show up clearly, and not only is it possible to identify them from their color, but the foliage and shape of the flowers may often be observed.



No passenger train moves so fast but that you can study some species of wild flowers, many of which will shine in the green meadows like stars on a clear cool night

ON MY initial trip, the first wild flower of any consequence that attracted my attention was the Wild Sweet Potato. It was in the latter part of August when Wild Sweet Potato blossoms were in the height of their glory, and I could see them shining for acres around, and their white funnel-shaped flowers blazed out of the green pastures like stars on a clear winter evening. The Wild Sweet Potato blossoms usually close by noon, and had I made the trip in the afternoon, I would not have had the pleasure of enjoying them. They are the most beautiful of our wild flowers, and their size makes it easy to identify them from a moving train.

The next prominent wild flower to be observed was the Wild Carrot. They were very numerous, and among the green vegetation they were prominent and were easy to pick out. I made an experiment to see how far it was possible to identify them, and found that they could be easily recognized for a distance of a hundred yards away.

Yellow Seas made up of two kinds of Sneezeweeds were very prominent, but Bitterweed was the most conspicuous species. Not often were mixed beds of these Sneezeweeds observed, but I believe that helenium nudiflorum, or the species with the brown center, were the most beautiful, though probably less prominent. When so many thousands of these flowers were observed growing in pastures along the way, it was easy to understand why the milk and butter had often come to my table this year bearing such a bitter flavor that rendered it unfit for food.

Wild Carrot may be identified for many rods away from a moving train

WHEN our train ran parallel or crossed running streams, lines of Joe Pye weed were full abloom, and their tall stiff stems stood erect like an army of marching soldiers. I do not think that I have ever seen Joe Pye weed look so handsome as it did from the moving train. Joe Pye weed and Tall Ironweed were often observed growing in the same beds, and no other tall wild flowers contribute more to the beauty of late Summer and Fall. Their colors lend a peculiar charm to the meadows and woodlands. Often long beds stretched almost a half mile at a time before us, that blazed like ravaging fire. Cardinal flower is another species of wild flowers that may be enjoyed immensely from a moving train. How many times its blazing torches welcomed our train along the way.

Beds of Cat-tails were frequently observed, and often both the narrow leaf and broad leaf varieties were observed growing congenially in the same bed. I observed a bed of Cat-tails growing on the side of a ditch within a few feet of growing Corn. The ploughboy who desired Cat-tails could have reached them from the Corn row without having to move out of the furrow. Often a clump of Sabatia or Rose Pinks were observed, and it was possible to identify them for many rods away from the train.

Early Goldenrod was just beginning to bloom and its golden flowers often established golden lakes in woods and fields. The Goldenrods are among the easiest flowers to study from a railway train.

IT IS a thrilling experience to study wild flowers from a railway train on a short trip, and I think that I could not have chosen a more excellent

nature spot than the one I did in northwest Georgia. On a longer trip than fifty miles, if the observer is a wild flower enthusiast, he or she may awake to a stiff neck which may be quickly removed by changing positions to the other side of the car.

The various species of Morning Glories and Trumpet Creeper from their habits of climbing fences, shrubs and trees make them very conspicuous, and the railway observer will feel thankful for their lofty habits, since it makes them easy to study.

As my train slowed up, the confused mass of a green something near the railway track began to take form, and then large beds of Poor Joe or Poverty weed, were recognized growing on the railroad bed, and near the ends of the crossties.

When the train crossed a creek, Joe Pye weed and Tall Ironweed were always to be seen

In observing the wild flowers from a moving train, you will be struck with the wonderful wisdom of various plants. The low blooming species will venture up to the ends of the crossties, and Poor Joe will nestle up as near the moving train as possible, often close enough to have a shower of grease dashed over it. Rough Buttonweed, and Milk Purslane and Prostrate Knotweed will even venture across the iron rails and set up housekeeping where they thrive and blossom and remain happy until the section foreman orders the workmen to remove them with their shovels.

ROUGH Buttonweed has pretty white flowers that are large enough to identify from a slow moving train. These three species of plants do not lift their heads high enough to be hit by any part of the engine or cars, hence they are entirely safe from being crushed by the moving train. Their only enemies are the dropping grease from the train, and the section men.

The advocates of wild flower protection seem to have overlooked the fact that invitations should be extended to every one, to gather all the wild flowers of any species that are found growing on the right-of-ways of the various railways. It is the duty of the section foreman to keep them cut and burnt, and some of the railroad companies are now using engines fitted with spray outfits in order to destroy the flowers and weeds along the way.

On my observation trip I found that it was possible to even identify stranger-flowers on the way, especially those whose blossoms were large enough to recognize, and the foliage of sufficient size that the shape might be closely observed. I saw a number of strange faces too far away to identify, but I turned my head long enough to see Elecampane for the first time, and in the passing show I got a glimpse of both flower and foliage to recognize it, although I had not seen it before. And then a little later on we ran into a bed of them, and it was difficult for me to stay in the car so great was the thrill.

If you are a real lover of flowers, when you make another trip on the train, suppose you leave the newspaper, the magazines and books behind, and read the book of nature that is opened before you as you move along. The chances are that you will be so overjoyed with the illustrations and text of this floral book that you will feel that you are being entertained by a circle of your most intimate friends.

Trees,—Their Value, Importance and Care

A thriving city, town, or village without trees is an impossibility. Real estate men claim that one or two shade trees, properly placed and spaced so they can fully develop, add at least fifty per cent to the value of the lot.

Court decisions have brought verdicts up to $500 per tree. Some trees, as Oaks, no money could replace, for large Oaks cannot be transplanted and it takes one or more generations to grow them to large size.

Shade trees are among the first things that guide a stranger in choosing a home in a city. If people settle where there are no trees, their first desire after building their shelter is to have shade.

From the viewpoint of health, the value of trees cannot be figured in dollars and cents. Trees help to purify the air by absorbing the carbonic acid gas that is exhaled by man and giving back the pure oxygen that he needs. The *Popular Science Monthly*, some years ago, printed the following resolution which was passed by the New York County Medical Society:

"*Resolved*, that one of the most effective means for mitigating the intense heat of the summer months and diminishing the death rate among children is the cultivation of an adequate number of trees in the streets."

Trees help to modify the heat by cutting off the sun's rays and by evaporating large quantities of water through the leaves. While trees in their native forests receive no care from human hands, in a city they must either have human care or become sickly and die.

Paved streets, sidewalks, sewers, water and gas pipes, and wires are things that our city trees have to fight against. Very often in grading, a large percentage of good soil is taken away and the roots are more or less exposed. In raising hay or sod under trees, the rain water is mostly absorbed before it has a chance to penetrate the ground deep enough to be of benefit to the trees. As the trees get older, the soil becomes exhausted, pavement and digging operations prevent the roots from spreading further and the best the trees can do is to exist.

Unless they get water and nourishment they will be at a standstill or go backward, branches will die; and if not properly cared for, decay will set in and the life of the trees will be shortened considerably.

Where nourishment is plentiful the branches sometimes grow out of proportion. They do not make enough caliper to carry the heavy load of leaves, especially in a rainstorm. A shortening of the branches in such a case is very essential as this will cause a stronger growth in circumference.

As a rule such trees have too much wood that is not needed, yet it takes vitality from the tree and makes the crown dense. If the trees are properly thinned, the wind generally passes through them without causing damage. Such thinning out must be done very carefully and judiciously without spoiling the shape of the tree and without reducing its shade-giving area.

A tree in perfect health and condition should have large leaves of dark green color. If the conditions are otherwise, the tree is not healthy and is an easy prey for insects and fungous diseases.

If decay has set in, because of broken limbs or for other reasons, it is sometimes well worth the money to have the tree looked after before it has suffered too much. However, there have been times when money has been spent on trees that were not worth it. Either they were too badly diseased or they were short-lived trees.

Before filling cavities, great care must be taken in cleaning out the wound, a proper antiseptic must be applied after the wound has been thoroughly sterilized. The filling operations consist of "clean, disinfect, and seal."

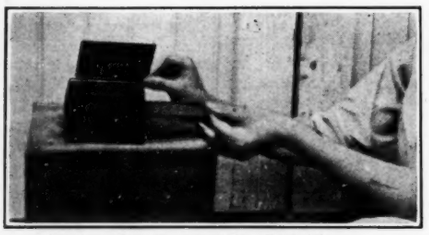
Very often the position of branches is such that they are likely to split. To prevent this they should be bolted and chained.—*Minnesota Horticulturist*

Following the Air Line

BY JOSEPHINE MORSE, (Mass.), In *Gleanings in Bee Culture*

(Photographs by courtesy of A. I. Root Co., Publishers, Medina, Ohio)

FOR the true lover of the outdoors there is nothing more pleasant and interesting than pursuit of the honeybee to her home in the wilds. To the beekeeper there is an added zest and the gaining of a more complete understanding of bee life and nature. The commercial honey producer must of necessity know something of the instincts and reactions of the insects with which he works, but he is apt, unless a real naturalist, only to acquire a sufficient practical knowledge with which to work successfully. This knowledge he uses



Bee-hunting box used by Miss Morse. Pulling the slide to let the bee down onto the comb, and pulling the cover over the glass to darken the box

mechanically day after day in his beekeeping manipulations, his attitude being somewhat that of a superior being who guides the activities of his laborers and uses them as tools for his own purposes in securing him a livelihood.

The bee-hunter sees the honeybee working out her own destiny and, though he may capture her and her colony, he has had a glimpse into her free and natural mode of life and must marvel anew at her adaptability and her strength, not as an individual but as a co-operative member of the colony.

BEE HUNTING IN AMERICAN LITERATURE

THERE is an interesting story by James Fenimore Cooper, called "Oak Openings," which all beekeepers should read. The scene is laid in Michigan on the shores of the Kalamazoo River just before the war of 1812, when there was much unsettled territory traversed only by Indians, hunters and traders. The central figure in the novel is the bee-hunter, called by the French "voyageurs" of the region "le Bourdon" (the drone) because "he lived off the labors of others." This assumption was not entirely accurate however, for, though he lived on the sweets produced by others, he really had to work as industriously as any worker bee to find the hoards of honey and to secure them. This, in fact, was his sole occupation and he found it profitable. He lived entirely alone in a shanty securely built to withstand the frequent attempts by bears, during his absence, to break in and steal, honey being the bears' favorite food, which they can scent from afar. All through the Summer from July to October, he "lined" bees and secured their honey, storing it in his shanty—to be taken away later in his canoe and sold to the people living in the settlements along the river, who all waited till his arrival to stock up their winter stores of sweets.

The opening chapters of the book describe his method of "lining" bees, a method similar in essentials to that of the present day. He caught each bee separately in a glass tumbler, which he then set over a small piece of comb whose cells were half filled with clear, thin honey. Then he put his cap over the tumbler. As soon as darkness surrounded it, the bee naturally ceased fretting to get out to the light, discovered the honeycomb and started feeding. When it was liberated, he lined it, noting keenly the larger and larger circles made by the bee as it located the position of this delightful source of honey and made its final straight dart for home. After this line was accurately determined, he made a cross-line or angle by going a hundred yards or so further on, either to the right or left, thus getting the point of intersection of the bee's lines of flight, and thus the location of the bee-tree.

Through the aid of his profession, "le Bourdon" extricated himself from a very serious predicament with hostile Indians. He so impressed them with his supposed power over the bees that their attitude changed from one of distrust and hostility to awe and respect for this pale-face medicine-man. The bee-hunter accomplished this by taking up the bees just as they were ready to make their flight and holding them to his ear and pretending they told him where they were going. The Indians' keen eyes saw the bees circle, but practice had not enabled them to see further and get the exact bee line. They were also mystified by his covering the tumbler with his cap, considering that a further proof of necromancy.

Nowadays there are probably very few throughout the length and breadth of the land whose sole occupation and source of income is bee hunting. But there are still a great many bee-hunters left—particularly in the more remote and rural districts of New England among some of those inhabitants of real Yankee ancestry, who are keen of eye, shrewd of wit, and as E. H. Vaughan, veteran bee-hunter of Worcester, Massachusetts, expresses it—"who would rather hunt bees than eat when they are hungry."

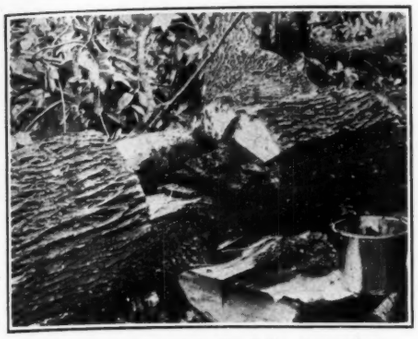
HOW TO LINE THE BEES

Every bee-hunter has his own idea of the box which he takes with him for hunting bees, and feels firmly convinced that no other is so good. The type I like best myself consists of a box about 3 x 5 inches, made with a top and bottom section; the bottom part to hold the comb. The top part is made with a glass cover and a wooden slide at the bottom. This upper part is used to catch the bee. When put over the flower on which the bee is working, the slide is pushed in gently, pulling the flower out at the same time without injuring or liberating the bee. On the bottom of this section there are very small pegs, which fit into corresponding holes in the lower section, so that when placed on top it fits very neatly. After the upper part is fitted over the lower, a small flat piece of wood (or your cap, if you prefer!) is put over the glass to darken the interior, and the slide is drawn so the bee may go below to feed. When fully absorbed in its occupation, the upper part can be lifted off so the bee can leave when ready. This box is not my own invention, but was made for me by another enthusiast. Perhaps that is why I am not at all dependent on it, and would really just as soon go out as simply equipped as "le Bourdon"—with a box and a piece of glass to put over it, or a tumbler with which to catch the bees, some comb, and a little bottle of sugar syrup to pour in the comb when the box is "set up."

The best place to set up the box is where one can get a clear, unobstructed view in all directions; or, at least, where the immediate surroundings are in the

The tree is down and the men are finding the location of the honey preparatory to cutting the opening to take it out

open. One bee is caught at a time and introduced to the piece of comb, which should be placed on a fence post, stone wall, boulder—something a few feet up from the ground, so that the overhead circling and departure of the bees may be watched with the least discomfort of position. Several can be started at the same time if they are caught quickly.



An opening is cut in the fallen tree where the bees are located, exposing the combs

BEST TIME FOR HUNTING BEES

The early Fall seems to be accepted as the preferable season for hunting bees. The temperature then is comfortable, most of the honey is sealed, and, if all went well, a colony of bees has more honey in the Autumn than in the early Summer. The best "wild honey" is unsurpassed, due to the long ripening (thickening and mellowing) in the comb in the warmth of the colony. The comb itself may be as black as ebony, but the honey will be as clear as when first put in, and of superb quality and flavor. A territory for hunting should be chosen in which there are no domesticated bees within a radius of a mile and a half. It is no fun to spend the greater part of a day (as I have done occasionally) in successfully lining bees to some one's hive!

A pleasant way for members of a bee-keepers' association to get together and have some real fun is to go on a bee-hunting expedition with an experienced bee-hunter as a leader. The members of my county organization, the Worcester County Beekeepers' Association, have been taken on two such bee-hunts by Mr. Vaughan. The party went in automobiles from the city of Worcester to a neighborhood selected in advance by Mr. Vaughan. They were successful in every way in finding the bee-trees and in the relaxation and pleasure of a "day off" in a lovely countryside, with (to bee-keepers) one of the most interesting games in the world to play.

Finishing the job. The vessels are well filled with honey and the bee-hunters have enjoyed a good day's sport

Mr. Vaughan always emphasizes the point of making a strong initial line, thus getting the line firmly fixed and easy to follow. Also, if time runs short, it will be an easy matter to "pick up" the line the next day, or even several days later, as the bees will be on the lookout and will be making frequent visits to the spot where they secured such a delightful and unexpected "free lunch." It is really the robbing instinct in bees of which the bee-hunter takes advantage, exposing sweets for their temptation and encouraging them to partake. They get in the same furor of excitement as they would if robbing a weak colony or an abandoned hive.

DETERMINING DISTANCE TO THE TREE

The time taken before the bees return may be noted. It is generally conceded that an absence of fifteen minutes indicates that the bee-tree is one mile away. If a line is made in more than one direction, a little colored chalk mixed with water can be dabbed on the bee's thorax between the wings to distinguish the different bees and to determine just how long each took to go and come. If a cross-line is made, the point of its intersection with the first, or initial, line will be the place where the bees live.

Ten Points in Planting Trees

C. L. HARRINGTON,

(In *Wisconsin Conservationist*)

1—Select a kind of tree that will grow in your location. A safe rule to follow in this respect is to choose a variety from those that are already thriving in your vicinity. The White Pine, Norway Pine, Hard Maple, Basswood, White Elm, Red Oak and White Ash are the most serviceable trees for northern Wisconsin. The White Oak, White Elm, Walnut, Hickory, Hackberry, White Ash, Red Oak and Norway Spruce will thrive best in southern Wisconsin.

2—A ten or twelve foot deciduous tree is considered the best size for ordinary planting, whereas the best results for evergreens will be had with trees eight to twenty inches in height. They should be free from scales and insect pests, such as moths, scales and borers. The trunk should be straight and it should have a single leader.

3—When digging trees in the woods be careful not to injure the roots and secure as many of the fibrous ones as possible. Nursery grown trees are better because they have been transplanted several times and have better root systems.

4—Do not allow the roots to become dry, but keep them moist and covered until you are ready to put them into the ground.

5—Ragged ends of broken roots should be cut off with a sharp knife. Limbs should be cut off close to the trunk of the tree to a height of seven feet from the ground in the case of hardwoods and the lower whorls should be removed when planting evergreens. The other limbs should be pruned slightly, making the cut just above a bud. The leader should not be cut.

6—The soil should be a light loam which is smooth to the touch, finely grained, and easily crumbled. If the ground taken from the hole is pure sand or heavy clay it would be well to remove this earth and replace it with good loam.

7—Dig a hole large enough to accommodate all the roots without bending or crowding. It should be at least three feet in diameter and two and one-half feet to three feet deep for a good sized hardwood, and of proportionate size for smaller trees. The loamy earth should be packed around the roots, which should be placed in their natural position as far as possible. Two or three inches on top should be left loose, as it will help to hold the moisture. Plant the tree at the same depth that it stood in the nursery or an inch or two deeper.

8—If the soil has become dry add a few buckets of water to the loam as you plant. Trees newly planted should be thoroughly watered about once a week during dry weather if possible and also a little cultivation will assist their growth.

9—A stake nine to eleven feet long should be driven two and one-half to three feet into the ground near the base of the tree. Tie the tree to the stake near the top of the stake by means of a tarred rope slipped through a piece of three-quarters inch hose about ten inches long placed around the tree and the stake in the form of a figure eight.

10—A piece of heavy wire netting, one inch mesh, six feet long and about twenty inches wide should be placed around the tree and fastened to the stake with staples. The end of the wire should be two inches from the ground and should not come nearer the tree than two inches. The width and length of the piece of netting will vary according to the size of the tree and stake, and the distance they are apart. Other forms of tree guards can be used, but this one is serviceable and economical.

A reader sends a newspaper clipping which says that there is a bean in the tropical regions which coughs. When particles of dust gather on its leaves, the air cells covering the face of the leaves, which are the breathing organs of the plant, become filled with gas and swell until, with a slight explosion and a sound resembling a cough, the gas blows away the dust.

Some Relatively Unknown Annuals

BY DONALD R. BATTLES, (Conn.)

LAST Winter while I was looking over the flower catalogues, my attention was attracted by collections of annuals offered by one of the well-known English firms. I ordered two, one containing fifty varieties of hardy annuals, and the other twenty-four varieties of half-hardy and tender annuals. By the way, these terms are largely without meaning in this climate, as many of the so-called hardy annuals are only half-hardy at the most. When the collections were received, they contained mostly well-known sorts that I had grown before, but a number were new to me and to all my friends. Some of the new varieties were comparative failures, but a few promise to be real acquisitions, and I think the results might be of interest to others.

The hardy annuals, and most of the half-hardy ones as well, were planted in rows from six inches to two feet apart in the vegetable garden the latter part of April or early in May, and were not transplanted. The soil was rich loam, with a large amount of humus, which holds moisture well, and is quite rich without the addition of fertilizer. Only a small amount of sheep manure was used. The seeds were planted in shallow drills one-quarter to one-half an inch deep, rather thickly, covered slightly, and the ground well firmed by walking on it. Of course, the character of the soil must govern, but I am convinced that very many seeds never come up because the ground is not packed firmly enough about them. (And also because they are planted too deeply. Editor)

The tender annuals were planted early in April in a cold frame, in light sandy soil, in rows three inches apart, and transplanted in May to their permanent quarters, in rows in the vegetable garden.

CARE of all during the Summer was limited to cultivation with the wheel hoe, and weeding and thinning by hand. No water was given, although the season was dry. In spite of an unfavorable season the experiment was interesting, and the majority of the flowers bloomed profusely.

In addition to the more common annuals, the following were of special interest, either because of their success or their failure:

Candytuft—(purple). This is far from new, but it seems that the white is now the only color commonly seen. The purple and red varieties do not make such big individual heads, but they are very floriferous and make a fine showing. The color of the purple is very good. Not transplanted.

Celosia Plumosa. The best strains of feathered Cockscombs are a revelation to those who have grown only the commoner varieties. From two to three feet high, they come in all shades of yellow and red, including the brightest crimsons, oranges and scarlets, the deepest cardinal, and many shades of yellow. A bed of these in bloom is the most brilliant thing I know. They were started in the cold frame and transplanted. The soil must be rich and moist or they fail. And do not buy cheap seed. It is worthless.

Clarkia Elegans. A charming semi-double flower of various colors, native, I believe, to the west coast. I have tried it a number of times and while I get some flowers, it is never happy. I don't know why. It is worth trying, because if it does succeed, it becomes a bush of wiry stems with little rose-like flowers at every leaf axil. Not transplanted.

Convolvulus Minor. The Dwarf Morning Glory is so old-fashioned that it is nearly new again. At least I never see it about here. It grows only a foot or eighteen inches high, as thick through, and the numerous flowers of light or rich dark blue, crimson, or purple, open only in the sunshine. It is much more hardy than the tall Morning Glories, and is distinctly worth while, for while the flowers are rather small they are numerous and the flowering season is long. In fact they continued to flower after frost. Not transplanted.

Datura Wrightii. The Daturas are rather confused as regards nomenclature. There are white and yellow varieties, also a white marbled purple, and a double. The one I grew is a sub-shrubby plant, about three feet high, with large trumpet shaped extremely fragrant white flowers that open best in the evening. Really a tender perennial, the roots may be kept over the Winter like Dahlias (only with a little more moisture) and make larger plants the second season, but this is not worth while, for they are amply large the first. I like this plant for its lovely flowers and their fragrance. It was started in the cold frame and transplanted.

Hawkweed—(Pink and Yellow). Two different plants, with seeds quite different and differing types of growth. The yellow has much branched leafy stems about two feet high, with numerous pale greenish yellow flowers. The pink is more dwarf, with a cluster of leaves at the ground and one foot long leafless stems with solitary flowers. A prettier flower but many less of them. Both open only in the sun. They are rather weedy, but very easy to grow, and worth trying, though not very showy. Not transplanted.

Bartonea Aurea. Planted where it is to flower, this is one of the first to show its rather large buttercup yellow flowers, and alas! it is one of the first to go out of bloom. It is about two feet high, very easy to raise, and very showy and worth while. It transplants very poorly.

Ionopsidium Acaule. The name of this little gem is in print just about as long as the flower is tall. From the neat tuft of foliage tiny white starry blossoms raise their heads a scant two inches. For an edging or between stepping stones it is ideal. Also, while an annual, it self-sows so easily that once planted, you will probably always have it with you; yet it never becomes objectionable. The flower is not unlike the Houstonia Coerulea that carpets the meadows about here.

Leptosiphon Hybridus. Another little gem, slightly taller than the above, with more mossy foliage, flowers much more numerous, a little larger, and in the prettiest tints imaginable of pink, yellow, lilac, mauve, red, brown, and a hundred more. Scarcely any two plants will be exactly the same color, and all are charming. Each plant will spread to cover a space from three to six inches across. Altogether this is one of the most charming little plants I have ever seen, as easy to raise as upland cress, and yet almost unknown. There is a taller variety, Leptosiphon Androsaceus, with pale blue flowers, not nearly so attractive or free flowering. Not transplanted.

Lupinus Atrococcineus and Hartwegii. The annual Lupines can't claim to be new but they don't seem to be common. The pink Atrococcineus is two feet or thirty inches tall, early flowering, and very pretty, but does not flower very long. The blue Hartwegii is a little taller, much later, and longer flowering. Also the spikes of two toned blue flowers are much longer and are branching. It flowered until after heavy frost with me. The stems of Hartwegii are hairy, those of Atrococcineus smooth. I suspect that both, like perennial Lupines need a deep, rich, moist soil to do well, as I tried Atrococcineus in sandy soil once with mediocre results. Both are ornamental in the garden and make good cut flowers. If Hartwegii spikes are put in water, no matter what the original position of the flowers, the next day the tip of every spike will be pointing vertically upward. I recommend a trial of these. They will not bear transplanting with any degree of success.

Nigella. Another old-fashioned flower. I remember the Love-in-a-mist or Devil-in-a-bush, as we called them, dependent on whether elders were or were not present, in my grandmother's garden when I was a boy.

The soil was heavy clay and they did well. Here, in light loam, the lovely blue *Miss Jekyll* is only mediocre. Not transplanted.

Nemophila Insignis. A Californian annual with pale blue bells. This is pretty, usually does well for me, but was rather a failure this year. It self-sows. Not transplanted.

Phacelia Campanularia. The earliest flowering annual in the lot. The foliage is bronzy, the plant some nine inches tall, and the flowers fairly numerous, about three-quarters of an inch across, and a very rich deep blue. Rather straggling in growth and none too free flowering, this flower is useful because of its earliness and its depth of color. Not transplanted.

Rhodanthe. A Strawflower and probably the prettiest of all Strawflowers. The stems and leaves are glaucous, about eighteen inches high. The flowers are semi-double, an inch and a half across, very numerous, and a charming pink. This flower is very well worth while and much superior to the better known Helichrysum. Planted in the cold frame and transplanted.

Saponaria Calabrica. A rather insignificant dwarf plant with small five petaled pink blossoms in limited quantities. Not worth while. Not transplanted.

Silene Pseudo-Atocion. A taller growing plant, with flowers very similar to the above, but larger and more numerous. Early flowering. Rather weedy. Not transplanted.

Swan River Daisy. (Brachycome Iberidifolia) Offered by most seedsmen but apparently not well known. Comes in blue, rose, and white. The blue, which I raised, is not a pure blue, tending to mauve, and the flowers vary considerably in shade, but all tints are harmonious and pleasing. The flowers, one-half inch across or more, are innumerable, in form like a star Cineraria, and exquisitely beautiful. Easily raised and altogether one of the best annuals. The flowering season is moderate in length, and a smaller second crop of blossoms follows the first. Raised in the cold frame and transplanted.

Viscaria Cardinalis. The Viscaria comes in a number of colors. I have raised only the cardinal and the lilac. The cardinal is a fine color, but a rather sprawling grower. There are dwarf strains that might be better for the flower bed. Late blooming. Worth trying. Not transplanted.

Whitlavia Gloxinoides. If the plant were stronger, the flowers larger, deeper in color, and more numerous, this would be very well worth while. The individual flowers, like a tiny pale blue-edged Gloxinia, are attractive, but they are too small and sparse. I think selection might do something for this flower. Not transplanted.

Xeranthemum. A comparatively unknown Strawflower. Late blooming, solitary flowers on fifteen inch stems from a cluster of basal leaves, pink, yellow, white, buff, and deep rose. Rather interesting and good for cutting, but not showy. Not transplanted.

Nemesia. One of the most charming and tantilizing flowers that grows —or doesn't, and no one can tell why. One year I had lovely little plants nine inches or a foot high, covered with odd shaped blooms in blue and white, rose and white, yellow, red, apricot, and many intermediate shades, self-colored or parti-colored; twice the seed did not come up at all; this year the plants were scattering and did not do very well. Uncertain as is germination in the open ground, it seems even more so in the house. However, on account of its beauty it is worth trying, and I would recommend making two or three sowings. Some will probably then come up. Not transplanted. The plants however transplant well.

TO ANY one who has a little surplus ground and a liberal amount of curiosity, I would recommend the purchase of a collection such as I sowed. The results will be delightfully uncertain, but the chances are that some of the varieties you try will become permanent residents of your garden. If space or the gambling spirit are lacking, I would urge that you try some of the following, which have merit and are not well known:—

Swan River Daisy.
Leptosiphon Hybridus.
Celosia Plumosa.
Rhodanthe.
Lupinus Hartwegii.
Lupinus Atrococcineus.
Ionopsidium Acaule.
Datura Wrightii.
Nemesia.
Bartonea Aurea.
Convolvulus Minor.

Except Nemesia, all the above are easily grown. Celosia Plumosa must have excellent soil; the Lupines need it for best results. The others will do with reasonably good garden soil.

Vegetation of the Arctic

ROLAND HOLROYD

(Reported in *Philadelphia Ledger*)

"One interesting thing that I noticed," said Prof. Holroyd, "is that Lettuce is apparently one of the most hardy of all vegetables, as it survives all the way to the Arctic Circle, something which scarcely another vegetable common to our own climate did.

"The Arctic vegetation is uniformly quick growing, as, to survive, it must take full advantage of the short Summer. The seed must also have immense vitality to withstand the winter temperature of sometimes as low as sixty degrees below zero.

"During the growing season the fact that there is continuous daylight aids in this rapid growth. Light contributes materially to the growth of plants and vegetables and the air during this period even so far north never really gets cold; as a matter of fact the temperature sometimes rises as high as eighty degrees.

"One of the dominant things was fireweed, a tall, purple plant, and in the latter part of June and the first part of July it made a great showing. This was also the case with the Painted Cup, a pinkish flower and a relative of the orange and red Painted Cup which we have in our own climate.

"The wild purple Flax was growing in banks around Fort Norman, but this was about the only place where I observed this plant. I found Orchids quite in abundance while marooned behind two desolate islands, but did not see them in profusion elsewhere.

"There's a perfect thicket of vegetation near the Great Slave Lake. In a few open places there were Orchids, but the Calypso was quite abundant. On the islands of the Mackenzie River there were packs of Twinflower, also the pink Wintergreen in the low-growing form, Pyrola and also the single-flower Wintergreen Moneses, in great profusion.

"The vegetation of the lower Arctic regions, its plant and tree life is much more abundant than the average person would imagine. The dwarf Dogwood is very abundant and these have white petal-like leaves spotted with pink; ours in this climate have the pure white leaves.

"Growing on the bluffs at various places were vegetable carpets of so-called silver-weed. We have not that particular one around here, but we have some which are closely related to it. I saw Bluebells in patches occasionally, and the wild Calla persisted right to Aklavik, a new post established on the Mackenzie Delta about fifty miles from the Arctic Ocean.

"As to the tree growth, starting from Alberta, banks of Spruce were dominant, and where these had been cleared out by the logging operations, its place had been taken by the Western Cottonwood. These logging operations were not for the general lumber market, but to obtain fuel for the boats, practically all of which are wood burners, and they consume a good deal of it.

"This was the dominant tree formation all the way down except that the trees got smaller as we went north. There were also some Western Alders, but the Cottonwood had generally taken the place of the felled Spruce.

"I had thought that the trees would be comparatively stunted so far north, but at Aklavik they were still of good size. And it must be remembered in this connection that Aklavik is farther north than the most northern point of Iceland and farther west than one-third of the way from San Francisco to Honolulu, as the country juts far into the ocean.

"The purple Vetch was everywhere abundant right down to the Arctic Circle, and the northern Bedstraw was found along the river banks and the sandy shores. The soil is rather good, there being a rich carpet made from decaying leaves and Pine needles and the silt washed down by the river."

The hardiness of some plants to withstand low temperatures is indeed remarkable, and the above article is interesting in this connection. Much thought and attention is now being given to the developing of plants of a hardy nature which will increase the flora of the North.

The Gladiolus

On the Size of Gladiolus Bulbs

BY R. C. H. LENSKI, (Ohio)

IN REGARD to the size of Gladiolus bulbs a few things should become better known than they seem to be at present. The usual grading is for commercial purposes, and anyone who wants to grow Gladioli should disregard that grading and follow one of his own. If the idea is to put bulbs on the counter for selling to any and all customers, many of whom know very little about growing these flowers, the large size will be desired, for the larger the bulbs, the more such customers imagine they are getting for their money. They are like the Dutchman buying boots in the store. He took the biggest size they had, because he wanted the most he could get for his money.

The choice size for growing purposes is one inch, and even three-fourths inch. The first hundred *Schwaben* we ever bought were in the latter size, and the man sent one hundred and five. Every one of the lot made a fine, full bloom spike. The bulbs harvested were nearly all first size (1½ inch), and there were many, very many, bulblets. Since then I have planted many large *Schwaben*. They may split into two bulbs, but whole rows can be dug very fast—there will be hardly any bulblets. That is the story in many cases.

A friend called once to show us some extra large bulbs, monster bulbs one could call them, some new Primulinus variety. They did look great. But later on, when we inquired about how they grew, the report was discouraging. Now that does not say that all large, fine looking bulbs are inferior, but it does say that size alone is not the criterion for the man who makes a business of growing.

THIS explains the new grading that one meets now and then. There are two general sizes, all one inch and up, and the rest less than one inch and on down. That is a sort of easy grading and certainly good for practical purposes, especially with the commoner varieties. But the very high priced varieties are also graded thus by some growers.

A few varieties are exceptions, and one must know that. One of these seems to be *Orange Glory*, which is a shy bloomer. You cannot count on this variety blooming from one inch bulbs, at least I can't, and I have grown this variety a number of years. Some other varieties run the opposite way. They bloom from young, small bulbs, make bulblets, but refuse to grow, at least in ordinary circumstances with me, any large-sized bulb. I do not remember ever having had a two inch *Rose Glory* bulb. I seem to do extra well if I reach one and a half inch size. There are others the same way. Soil and climate and season may come into play, but the general fact I have come to accept.

As to first and second size: When the former is just one and a half inches or a trifle more, and the latter one and a fourth inches or a trifle more, I would like to ask, what the real difference is anyway. Practically there is certainly none. Plant two rows of the same variety in these two sizes and I will hazard the prophecy that no man who comes to see them when in bloom will be able to detect the difference. At digging time the one and a fourth inch bulbs may turn out superior to the other lot, at least furnishing more bulblets. Yet we see the quotation of size one and size two constantly. For practical growing it is nil. I for one have come to throw these two sizes together.

WHEN it comes to great big bulbs (and there are varieties that make immense ones, I'll say), the story is different. I count these great big ones as practically two or three ordinary bulbs. For I see no use in putting such bulbs as they are in the ground. I cut them in two or in three. That leaves no doubt as to their being equal to two or three of ordinary size. And then I get that much increase anyway, though I take my chance on the resulting bulblets. I may get quite a few, again I may not. It depends. But I take it that I would not fare better, in fact would fare worse, if I planted bulbs like that uncut.

When one grows for bulbs, to get as much size as possible for selling purposes, it seems to me the thing to do is to clip out the bloom spike as soon as one can get hold of it. If the stock is clean and true, with no rogues to watch for, this ought to make the bulbs so treated as large as possible under the given conditions of soil, etc., and should bring about the maximum bulblet production. If this is a secret in growing, the secret is herewith exposed. Try it out.

I SOLD a lot of *Schwaben*, all number three, to a florist. He had his doubts, but finally took my word and planted them. He got the bloom he was after, and he had number one size bulbs for his sales over the counter the following Spring. I believe this is the thing for these men to do. They can thus make something at both ends of the game, get their flowers from bulbs that run cheaper in price when they buy, and sell the mature large sized bulbs when they harvest out of the soil. The next season they should repeat the operation, buying new smaller stock, letting go of their large ones which they have bloomed. The thing works perfectly with one inch bulbs, and on trial will work even with many three-fourths inch bulbs. I know it does with a variety like *Schwaben*.

Information along these lines should be spread. It will encourage the more rapid introduction of new and higher priced varieties. When one can buy small sizes for considerably less money, why not do it? Why wait till one is able to invest in big bulbs of the desired aristocrats? Some growers, of course, sell only their large bulbs of new varieties. I suppose they do it to get so much more cash out of our wallets. But there are many others who have more mercy on our cash, who let us start with a smaller size, save us money, make us their friends, and gain so much more of our trade.

EDITOR'S NOTE:

Prof. Lenski is right: Generally speaking, bulbs from one and one-quarter inch to one and one-half inch are worth at least as much as those one and one-half inch and larger. If the big bulbs are old and overgrown the smaller ones are worth more from every standpoint. Some growers are already adopting as their first size bulbs one and one-quarter inch and larger and it seems to be a very sensible plan. This is a matter which could easily be taken up by the American Gladiolus Society and recommendations adopted.

Prof. Lenski offers some suggestions which the Editor knows from his own experience are altogether workable and correct, and these suggestions should have careful consideration.

My Gladiolus Test Plot

BY F. H. STEVENS, (Northern New York)

LAST Winter I mentioned in THE FLOWER GROWER that I was starting a test plot using cormels, and this is in the nature of a partial preliminary report.

I have in this plot about one hundred varieties, most of them medium priced, some of them new, some rather old. Among them are more or less representative productions of most of the better known American hybridizers, as well as some others. In some cases the cormels came direct from the originators and some from others. I found that some were very willing to sell me cormels of their varieties at reasonable prices, and some sent them without charge, while others did not want to bother with the sale of a few cormels, and I had to secure those varieties from some one else. Some that I really wanted I could not find at all.

I planted preferably about a dozen of each variety; in some cases a few more and in other cases less,—of one

variety only one cormel. That was of the white *Mrs. Prestgard.* No one who had it seemed willing to sell a single cormel but I finally did beg a couple, one of which unfortunately was spoiled.

I commenced planting them in boxes in the house about the first of March, and they were not all planted until after the first of April. In this connection I want to say that the best growth and the best germination was made on those planted the last half of March, and the poorest results on those first planted.

The method of planting was as follows: I built flats, each flat to fit about a half dozen high sided cigar boxes, and each cigar box to contain one variety. The sides of the flat came up about two-thirds of the distance to the top of the cigar boxes. The boxes were filled nearly full of soil made up of one-third garden soil sifted through a one-quarter inch screen, one-third clean sand, and one-third old, well-rotted stable manure, likewise sifted. This was well mixed, dampened and then baked to kill all weeds and insects; sifted again and a tablespoonful each of bone meal and hardwood ashes added to each box of soil. The cormels were peeled, or the shells split and planted about one-half inch deep, put in a light place and kept well watered. The temperature varied considerably, sometimes getting down as low as 50° F. and up as high as 80° F.

The first ones planted were a long time starting probably due to the lower temperature, but eventually they came up but did not seem to start growing as well as those planted later. The latter part of April they were all moved to a sleeping porch, glassed in, but without artificial heat and were finally put in the field early in May. All the time from planting to the time they left the house, they were kept well watered,—lots of water in fact. When they were moved to the field, some of them had made a growth of a foot or more, and others scarcely one-fourth that.

They were put in trenches in the open ground as follows: I made the trenches about one and one-half inches deeper than the boxes and slightly wider. In transferring to the trenches I first wet them down thoroughly and then carefully removed one end of the cigar box; then it was simple to take off the remainder and the whole thing was slid off the bottom of the box into the trench without disturbing them at all. I sifted fine dirt around, filling in by the sides of the trenches and a little among the plants themselves. Wet and firmed down and went on with the next.

The first lot I put out got frosted the first night, turned white and were seemingly dead, but in a few weeks they were coming on again and made nearly as good growth as any of them.

The percentage of germination was very high, 100% being rather common, and as low as 80% rather rare. A few gave scarcely 50% and one at least, hardly any. Seemingly the newer varieties gave the higher germination. For example, from Mr. Fischer, of Massachusetts, and Metzner, of California, I got a total of about twenty of their newer varieties, about a dozen of each variety, and from these I dug an average of better than eleven bulbs.

In most cases these cormels continued to grow all Summer. A few varieties ripened off and died, but most of them were green and growing when I dug them the very last of October. They were kept well cultivated and at times, when very dry, were watered. They made bulbs that averaged more than twice as large as those planted in the usual way. There were several first size bulbs, and generally speaking they produced a large number of cormels.

It may seem like a lot of bother but I enjoyed it. This would not be a practical way to grow cormels generally speaking, but if you have a few cormels of a rare or costly kind or have a pet seedling whose tribe you wish to rapidly increase, you can gain almost a year by growing them this way. You would gain both in size and in increase.

Many of these cormels blossomed, and I believe most of the bulbs will bloom this year, and I can hardly wait to get them out again. Anyway they are off to a fair start, and if one makes good and another doesn't, it won't be a question of old vs. new bulb, or anything of the kind.

I am in hopes that a year from now I may be able to write something of interest regarding some of them, and I believe that if our test gardens would start their tests with cormels, they might be able to give us more definite information regarding the respective merits of similar varieties.

This season I am starting another lot, confining myself to the newer or exceptional varieties. Among those already secured are several of the best of the new French varieties, many of Diener's best, (*Phipps, Dr. Bennett,* etc.,); and several new things that are well spoken of, but no *Geraldine Farrar,* for I can't afford $5.00 each for cormels for amusement.

I will also flower for the first time many of my own seedlings from seed of my own pollenizing and I don't know which is going to be the most fun, but I cannot conceive of a more enjoyable spare-time amusement for any business man than a Gladiolus garden.

Planting Gladiolus Bulblets in the Fall

IN THE October number of THE FLOWER GROWER I noticed a query from a party in Ohio, asking whether Gladiolus bulblets could be planted in the Fall, and I also noted the answer which stated they could not in Ohio. I am not criticising the answer for the soil conditions may be such in Ohio that fall planting would be a failure, but, I want to give you my experience in fall planting.

First, we have a rather sandy soil which is underlaid with a deep bed of sand and gravel which gives us perfect drainage. I had noticed every Summer that I had Gladioli coming up all over the garden, which I knew I had not planted, so in the Fall of 1921, I thought I would try some fall planting on a small scale. I prepared a bed four by eight feet by spading it good and deep, then shoveled out three inches of the soil, and after leveling the bottom nicely, I sowed broadcast, one pint of bulblets, mostly *Halley* and *Mrs. Francis King,* such as passed through a half inch screen. Then I replaced the dirt, and when freezing weather began, I covered the bed with three inches of fine manure. (This planting was done soon after digging.)

As soon as freezing weather was over in the Spring, I removed the mulch and found some of them coming through. In a couple weeks it looked as though I were starting a new lawn. In the Fall of 1922 I dug a quart of blooming size bulbs, besides getting more bulblets than I planted. I then smoothed the bed off nicely and in the Fall gave it another mulch as I did the Fall before.

This Fall, I got more blooming size than I did the Fall before. I have leveled it off nicely again, and will try it this Winter without the mulch.

I noted one thing in particular, that I got more bulblets from the fall planting than I did from spring planting, and got a much greater percentage of the bulblets to grow.

All bulblets from a half inch up had bulblets. It was not unusual for a three-quarter inch bulb to have from twelve to twenty good bulblets, some three-eighths inch in diameter.

I must not forget to state that both Winters we had twenty below zero.

I made my mistake in planting broadcast instead of in rows, for it was an awful job to pull the grass out without pulling up many of the Gladioli.

D. H. SNOWBERGER

Note by the Editor:

No grower of Gladioli in the North Temperate Zone should be misled by what is said above, into planting bulblets, as a general practice, in the Fall of the year. It is absolutely unsafe to do so. The amount of protection which the bulblets may require during the Winter depends on the severity of the Winter. As this cannot be foretold and as few growers could be depended upon to use necessary judgment in connection with the problem it is doubtful if fall planting of bulblets need be considered seriously anywhere north of the Ohio River. The plan many be workable and may succeed during some Winters and under certain conditions, and in the hands of the right man; but as a general method it positively will not do. But the Editor has no wish to be arbitrary in such matters and is always glad to print experiences and suggestions by other growers. Let us hear from others on this subject.

Much interesting and valuable Gladiolus information is necessarily held over for a future issue owing to great pressure on our columns this month. Wish my friends who specialize in other flowers would do as well as my Gladiolus friends.

The Wisteria

BY DELPHIA PHILLIPS, (Calif.)

THERE has been considerable controversy over the way the name of this flower should be spelled. It was named after Dr. Wistar, of Philadelphia, but as the first accredited spelling was made with an "e" instead of an "a", the former spelling has been adopted, though the name is often spelled in the latter way.

The flower is beautiful under any name, and is shown herewith as a decorative arch over a driveway in Long Beach, California, where it is particularly pleasing.

Wisteria, whose family name is Leguminosae, is a small and imperfectly understood group. Its oldest generic name is Kraunhia, and it seems to have originated in China, the species Wisteria Chinensis, being the mystery. For many years Sinensis, or Chinese Wisteria, and Venusta, or Silky Wisteria, bloomed together before it was discovered that they were different species. It is stated that the confusion as to identity of these two species was not cleared up until E. H. Wilson visited China and Japan in 1914 in the interest of the Arnold Arboretum. Silky has shorter racemes and is definitely distinguished by short, velvety hairs on mature leaves. It is more fragrant and blooms later. It has long been grown in Japan, but it is not certainly known that it originated there. It is thought to be an albino form of the blue-flowered Wisteria, which is itself still unclassified, but is cultivated in Peking and North China gardens.

Wisteria trained over an arch at Long Beach, Calif.

commonest, best and hardiest of the group. The branches of the vine have an odd habit of twisting about the trunk.

The leaves of the vine are odd-pinnate, racemes terminal. Calyx with two upper teeth short and subconnate; standard large, wings oblong, falcate free from the keel, often coherent at the apex, keel incurved, obtuse.

Wisteria Chinensis has pale green pinnate foliage and bears profusely dense, drooping clusters of purplish, pea-shaped flowers. Clusters about one foot long. Introduced into England in 1816, and later to America. Another and later name for this species is Wisteria Sinensis. A white variation of this species is very rare. The kind of white-flowered Wisteria offered in nurseries is really Japanese. A few specimens of white Sinensis have been found by travelers in North Central China, and a few plants have been brought to this country, but did not long survive.

LIKE many another flower the Wisteria has its romance and its The flower buds of Silky are well determined in Autumn, (another way of identifying it), and it is the earliest of all the Wisterias to come into bloom in Winter by artificial heat.

In New England country gardens the flower buds are often killed by cold in Winter, and do better if grown against walls of city houses which afford the vine some shelter. In the southern states the vine often reaches to the tops of trees more than one hundred feet high, but is seen in greatest magnificence in California.

WISTERIA floribunda, or multijuga, as it is sometimes called, is the common Wisteria of Japan, and grows naturally in the southern and central portion of that country. It has more fragrant flowers, and narrower and more open clusters. Mr. Wilson found one plant which extended over a bamboo arbor for one-sixth of a mile, with flower clusters which measured up to sixty-four inches in length. This long-clustered garden form is distinguished as variety *macrobotrys*. Wild plants of the above variety show flowers often not over a foot in length.

Wisteria japonica bears pale yellow flowers and is not hardy in northern latitudes, but is native to warmer parts of Japan.

Wisteria frutescens is an interesting species mainly because it is the first to be cultivated in the United States and Europe. This is native to our own country, but has never been popular like the Chinese and Japanese species. Wisteria macrostachys is found in the states of Missouri, Louisiana, and Texas.

As has been noted, the plant flourishes luxuriantly in California, and grows larger here, perhaps, than in any other state. One of the most interesting and noted individual plants in the world is growing in the grounds of H. T. Fennel at Sierra Madre. Its greatest reach is over three hundred feet, and the lateral branches literally cover the Fennel dwelling. From there it climbs to the top of a tall pepper tree. All this wonderful growth is from one root twenty-seven years old.

In 1913, three hundred visitors saw the plant in bloom, and the next year over one thousand people visited it. In 1918, the local Red Cross chapter issued invitations, and twelve hundred visitors paid for admittance to see the plant and help the cause along. The wonder vine that year earned $2,300 for the Red Cross. It is of the Chinese variety, and its owner believes it will live to be a hundred years old. Surely it deserves a long life!

Resting the Garden

One of our readers says he wants to let his garden rest for a year; that is, let it stand without cultivation and accumulate organic matter. What is a combination of seeds that can be put in this Spring to accomplish that result?

We could name a dozen combinations of seeds for this purpose. A simple and effective plan will be to work the ground up properly and seed to oats, with a heavy seeding of Alsike clover. The oats will start, and they can be cut as the seed is forming and left to lie upon the ground and decay there, or they can be left alone to ripen and fall down. In either case the Alsike clover will come in and make a nice growth through the Summer and Fall, and the following Spring it can be plowed under with good results. Half a dozen other combinations might be mentioned. They would require more work and be more expensive. The clover and oats together will be quite satisfactory.

—*Rural New Yorker*

An item in a newspaper sent by one of my readers states that botanists claim that plants have eyes and that this is the reason why leaves of house plants turn toward the light. It is alleged that where the leaf joins the stalk there is a spot of soft bright green tissue and that these are the eyes. Black paper tied over these spots render the plants blind and their leaves no longer turn toward the light. Every living thing in nature has senses not well understood.

The Utica Garden Club

This Department is a Continuation of

The Garden News

Official Organ of the Utica Garden Club

Edited by Officers of the Club at Utica, N. Y.

OFFICERS:

President.....Miss Marion P. Thomas
2nd Vice-President.....Mrs. C. S. Luce
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Secretary-Treasurer.....Miss Bessie Hatfield

Executive Committee—Mrs. M. Ruben, H. N. Tyler, and the Officers of the Club.

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Editorial Notes

WE DO not like to predict trouble, but surely this Winter bids fair to be as fatal to the gardens as the open Winter of three years ago. Mid-January with the ground bare and thermometer swinging every few days from the 40°'s to the biting winds and only 10° or 20° above zero. Lack of snow is really the most serious winter condition for this section. Up to Christmas probably little harm was done as no severe cold was experienced. Then followed a couple of weeks of snow which unfortunately disappeared during the high temperatures of the third week in January.

Two very strange bits of news appeared in a local paper dated January 17: One that a Utican had gathered a sprig of hardy Candytuft in bloom; the other told of Roses being picked in a garden on the lower Hudson, the exact location not remembered. Just ten days later it was 20° below zero in Utica.

Irises have been looking very fresh and green in our garden as though mid-April had arrived. We wonder what condition it will be in when April truly comes.

March means the return of Robins, Song Sparrows, Cedar Waxwings, Bluebirds and a number of other feathered folk. It also means changeable conditions which are liable to prove hard for the birds, so gardeners and other friends of birds must be very watchful. If severe storms come, be especially careful about supplying food, and if possible, shelter. Some birds use the empty bird houses for shelter.

We have been much interested to learn that an experiment in the teaching of biology is being tried out in our High School. Any up-to-date gardener soon learns that the laws of plant life are practically the same as those of animal life. This fact is being especially developed in the study of biology by what might be termed comparative biology. That is, each general law of life is studied first in its application to plants and then to animals.

For instance, there is only one law of reproduction which is modified in many ways to suit the varying conditions of development from the lowest forms of both plants and animals up the scale to the highest form of life, the human being.

Diseases in plants and animals may seem quite different but their origin is very similar. Doctor, nurses and health boards have learned the value of disinfecting, and gardeners must learn it, too.

The United States Department of Agriculture should be the "last word" on subjects in its line so we give this month an article on the Crow, feeling that if that mischievous bird has any good qualities they should be made known as a matter of simple justice.

The Garden Club resumed its meetings, after the two months' recess, the first week in February. The first was a social meeting held at the home of the president. A paper on "Summer Bulbs and Tubers" was read by Miss Bessie Hatfield and a number of plant conundrums were given. As usual when a number of flower lovers get together very little conversation was heard during the evening that did not touch on some phase of gardening. Light refreshments were served.

We read, a few days ago, an article on red clover by a physician, (of what reputation we cannot say), in which he gave some facts already well known and one new to us. The article referred to a Government Bulletin and was somewhat of a criticism. It spoke of the rich soil needed and of the value of clover in supplying nitrogen to the soil. Then of the fact, discovered in Australia several years ago, that the best of soil alone, could not insure a second year's clover crop. The discovery made there that cross fertilization of red clover is absolutely dependent upon bumblebees, is an old story. Australia imported bumblebees and thus had good crops of clover.

The part before unknown to us is that field mice destroy quantities of bumblebees by eating up their stores of honey. Consequently cats must be kept to kill the field mice and moles.

Each form of life has both friends and enemies and such is the interdependence of life that all are necessary. Until man and civilization upset Nature's equilibrium all went well.

The common names of plants lend themselves very readily to the making of conundrums. Dozens upon dozens of them could be made out in a short time. The only difficulty is managing to find a wording that will give the desired thought without making the answer too apparent.

Useful Hints for March

THIS is the special month for starting the early garden in sunny windows.

In February all left over seed should have been tested between damp sheets of blotting paper on an old plate. If a good percentage failed to germinate the old stock should have been thrown out and new ordered.

If seed has not yet been ordered, hurry and get at this work, especially if planting indoors or in hotbeds is planned. Even for cold frame and outdoor sowing ordering now is wisest, otherwise desired seeds may be sold out. This is a common fate of late orders.

All work of "getting ready" which has not been already accomplished should be, during this blustery month when the "Spring fever" is running high. The last few weeks of Winter certainly have more than seven days each and usually display more varieties of disagreeable weather than all the rest of the Winter.

Crows

CROWS have recently been roundly condemned in numerous sportsmen's periodicals and newspapers because of their destructiveness to other bird life, especially game birds. The articles, which were based on information gathered on the coastal islands of Virginia by an expedition financed by a well known ammunition company, have made

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a profound impression in many quarters. Undue emphasis on peculiar local conditions, however, together with lack of distinction between the common Crow and the Fish Crow and a faulty interpretation of the evidence at hand, has conveyed a grossly exaggerated and wholly erroneous idea of the predatory habits of the Crow, according to specialists of the Biological Survey, United States Department of Agriculture.

That the situation is by no means so serious as pictured is apparent from statements in the articles that the Virginia islands mentioned abound in game and are the favorite nesting places of large numoers of marsh birds. The whole district also is, and has been for many generations, one of the favorite hunting places of the East.

There is no question that on these Virginia islands the Fish Crow and the smaller numbers of the common Crow present are to be seen at their worst, as regards their relation to other birds. These objectionable traits have been given due consideration in the efforts of the Biological Society to appraise correctly the economic worth of the Crow. Such activities, however, must be placed in their true perspective, and evidence secured under peculiar local conditions cannot serve as a basis for a universal estimation of the species.

Government experts state that the bird to blame for most of the vandalism on the Virginia islands is the Fish Crow, a species quite different in habit from the common Crow. While mention has been made of this fact in the articles referred to, the difference is frequently lost sight of and the whole race of Crows is condemned by the evidence obtained largely against the maritime species.

The number of eggs of other birds reported to have been found under Crow nests also has been emphasized. Under a right interpretation this evidence will have a less serious meaning, so far as other bird life is concerned. Scientists state that breeding birds rapidly replenish losses due to egg destruction, and under the conditions described the production of two or more sets of eggs before a brood is brought forth is doubtless the regular occurrence.

The Biological Survey takes the attitude that on game farms and on reservations, where both time and money are spent to maintain bird life in more than normal numbers, control of certain injurious species, including the Crow, is warranted and even necessary. Government experts have done considerable experimental work, and advise control measures in localities where the birds are injurious to crops. On the other hand, a careful study of the economic status of the Crow demonstrates that over much of its range the bird probably does as much good as harm, and under some conditions its usefulness is pronounced. A full discussion of the Crow's worth is given in Farmers' Bulletin 1102, "The Crow in Its Relation to Agriculture," obtainable on application to the United States Department of Agriculture, Washington, D. C.

Just for Diversion

1. What part of a Lily is found in a chandelier?
2. What is one of the most destructive of plants?
3. What bush produces electric lights?
4. What does Mother say to her little son when she calls him in the morning?
5. What plant is a writer?
6. What would you call a rooster in the wee small hours of the morning?
7. How ought you not to plant your borders?
8. What plant is part of the eye?
9. Where would you walk to look for money?
10. What plant is a baby?
11. What plant is likely to be baldheaded?
12. What plant is an essential quality of a good business man or woman?
13. What two plants are out of place in the Summer?
14. What two plants are kept in cages?
15. What is the wisest plant?
16. What plant feels most important?
17. What plant has pie for its middle name?
18. What plant furnishes indigestible food and the remedy for the pain?

(Answers will be given next month.)

Annuals I have Successfully Grown from Seed

BY MRS. E. W. RUBEN

IN WRITING this paper I have always kept the thought before me that in describing the different flowers, I must not let my own preference for kind or color rule. All annuals mentioned, I have raised from seed, without the aid of glass of any kind, although I would say to the beginner, if you have no perennials to give you bloom in Spring and very early Summer, buy plants, as most annuals, sown in the open will not bloom until July or later.

Of course this is not a complete list of the best annuals as I shall mention only those grown by myself. I try two or three new kinds each season, either to add to my old favorites, or to discard another year as not being what I expected. I think we all ought to try something new each season, in a plot by itself, so as to become acquainted with good and new kinds of flowers, and at the same time I want to say emphatically, do not put a single plant in your bed or border that you do not know anything about. When beginning to grow my own plants that very thing happened to me. Not knowing what was the habit of a certain flower, I would find, after a few days of bloom, I had an unsightly bare plant or I had raised one all foliage and not many flowers. So now, anything new to me will be tried out in the vegetable garden before being used in the border another season.

I have arranged the flowers in alphabetical order and will try to tell you their bad points as well as good, as some have more bad than good about them, contrary to the catalogues. Annuals, I suppose we all know, are a class of plants, of which the seed is sown, the plants flower and then die, in one season. Right here I want to say, begin with good seed, from some reliable dealer. Do not save your own, unless it be an exceptionally good plant, then mark that plant. Not only is your own seed inferior to that grown by professional seed growers, but you are adding a good many weeks of bloom to your flowers by keeping the seed pods cut off. Every day, if possible, walk through your garden with a pair of shears and snip off any flowers gone to seed. You will be surprised at the effect this has on your plants.

THE Alyssum or Madwort is a little six-inch, white carpet plant, hard to beat. It is neat appearing at all times, begins blooming early in the season, and continues until killed by hard frost. It reseeds itself. As an edging it is hard to find anything better. A good variety is *Little Gem-Carpet of Snow.*

Ageratum, Floss Flower, makes a good bedding plant in white and shades of blue, grows from ten inches to one and one-half in height, has small brushlike flowers in clusters, but has the fault of soon fading after opening.

Snapdragons can be had in all colors imaginable except a clear blue and make either a fine bedding or cut flower plant. They grow from one to three feet tall and have flower spikes resembling the common Toadflax, only very much larger. I grow them for cut flowers only. Right now I want to tell you, do not grow flowers for cutting in your flower-beds or borders, as the cutting of the blooms soon makes them look bare, but as we all want bouquets, for either the house or for friends, raise them in the vegetable plot or some place set aside for that purpose.

You often read in a catalogue, glowing descriptions of some flower you never saw before. You try it and then are sorry you did. That very thing happened to me, before I tried out anything new in the vegetable garden. The African Daisy, known as Accoctis grandis, and the African Orange Daisy, turned out to be almost all foliage with very few insignificant daisy-like flowers on the plants. Both grow about two feet high.

No flower can equal the Aster as a

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cut flower, and it makes a fine bedder, too. It wants rich soil and lots of sun though. You can have Asters in all colors imaginable except a bright yellow. They grow from a foot to two and one-half feet high. About four years ago I grew one or two packages of every kind Vick listed. For the life of me, I could not tell the difference in some. *Queen of the Market* is the earliest but a little smaller than the rest. The *American Branching* are later but very large blossoms. I like the Crego or Comet type. They look like a big Chrysanthemum. *Heart of France* is the deepest red of them all, and has fine long stems for cutting.

The Balsams or Lady's Slippers grow two feet high; have stemless little flowers close to the stalk and come in white, pink, shades of red and lavender. They grow very rapidly, but have too much foliage for a good bedder. I grow them as a hedge one side of the vegetable garden, the single pink only. You will get plenty of seed from the Balsams at the end of the season.

Calendulas, or Pot Marigolds, are fine, old-fashioned plants, good for cutting or making a display. They will bloom till frost, over a long period if kept free from seed. They resemble a yellow Daisy, although there are double ones, grow about one and one-half feet tall and come in all shades of yellow, from cream to orange. Variety *Orange King* is very good.

The Calliopsis is another daisy-like flower in yellow or brown and yellow. It has long wiry stems, which makes it fine for cutting. It grows from one to two feet high according to variety. Plant it very close if you want any kind of a showing in the border.

The Candytuft grows about a foot high, very much like Alyssum, a little coarser, perhaps. Makes a good edge, although Alyssum is neater. It comes in white, rose and lavender.

Nearly everyone knows the Bachelor's Buttons, or Cornflowers, usually blue, but can be had in white and pink. They are good for cutting, but like the Calliopsis, have to be planted very close if used for bedding. They grow about two feet tall. For the room they take up to make any kind of a bouquet, I thought other flowers were better, so gave them up.

With the annual Chrysanthemums, I have not had very much experience. Last year I grew the variety *Mayweed*, one foot high, white, daisy-like flowers, single, semi-double and double; real pretty early in the season, but ragged later on.

For anyone who likes a colored foliage plant the annual Coleus is unsurpassed. I tried a package of mixed seed and got some very fine plants, some with enormous leaves, red, red and yellow, yellow and green, and many more.

The Cosmos is one of the best, if not the best, all around purpose plant we have. I cannot find a single fault with it. Every seed seems to germinate, grows very rapidly and blooms all Summer. The early or Midsummer variety is the only kind that will bloom around here, early enough for our rather short season. It grows about three feet high and comes in white and lavender-pink. The about two-inch across, star-like blossoms, come on long wiry stems, which make them fine for cutting, and the feathery foliage alone, almost, would be ornamental. If I were to name six best annuals, this would be one of them.

The year I tried Pinks I made the mistake of sowing mixed seed. I had white, pink, magenta, stripped and blotched. They did not blend very well, although the individual flowers were good. I saw an all white patch of them in a friend's garden, and they looked fine. I shall try just white the next time. There are not many flowers you can have with very bright colors and grow them in mixtures. The colors will clash. There are exceptions, of course, such as the Sweet Pea or Pansy.

The California Poppy has lovely, satiny, cup-shaped flowers and comes in white, cream to maroon red and all intermediate shades. Has grey-green, finely cut foliage and grows about a foot high. It is inclined to sprawl later in the season, so this year I shall grow them at the front of a stone edged border and let them fall over the stones.

The Snow on the Mountain is a stiff, coarse, upright growing plant, two and one-half feet high. The upper leaves are variegated, green and white, hence its name. The flowers are insignificant little things in a rosette of green and white leaves. It needs to be grown in a mass to be attractive.

Annual Helianthus, or Sunflowers, I think ought to be left for the fields where they are grown for their seed, for chicken feed. They are terribly coarse and grow from four to six feet tall. I grew both double and single, but discarded them after one season's trial.

If you want a low perfect shaped annual hedge, try the Kochia or Summer Cypress. It grows two feet high and each individual bush makes a perfect globe which turns red in Fall. It grows very fast, too, and usually reseeds itself.

The Marvel of Peru, or Four O'clock, is another old-fashioned flower; grows two to two and one-half feet high. Has single star-like flowers in yellows, pinks, red and magenta. A little too much foliage, perhaps, but neat looking at all times and very easily grown.

The Marigolds come in so many different kinds it would be hard to describe them all in a paper of this length. They are all good. The tall or African are three feet high, very double and come in lemon and orange. The dwarf or French grow from ten inches up, yellow, orange, and orange and brown, single or double. If you do not mind a very slight peculiar scent, the Marigold is certainly another one of the six best annuals; good for either cutting or bedding.

Nigella, or Love in a Mist, comes in shades of blue, two feet tall. The flower part is surrounded by finely cut foliage, hence its name. Too much foliage, so I discarded it.

Another one of the best six annuals is the Nicotiana, the Sweet-Scented Tobacco. Although not a very showy flower, it is so sweet scented. The white, star-shaped flowers look and smell very much like the Poets' Narcissus. In bright sunshine, they are apt to close up until late afternoon, but if cut while open will stay that way in the house and perfume a whole room. It grows about two feet high and is very easily raised from seed.

The Nasturtium is another almost perfect flower for the beginner! This is the one best all-round purpose flower. It will grow anywhere, blooms all season and always looks neat. The dwarf kind grows only about ten inches high. The trailing or tall kind is fine for covering old tree stumps or other unsightly places. Both furnish quantities of cut flowers which look especially well in a rather dark or poorly lighted room. They seem to brighten it up. Of this plant, you can save your own seed as you will get plenty of it.

Pansies are favorites with everybody, I think, but grow very slowly from seeds sown in the open, so had best be bought. They come in any and all colors. When they get straggly in late Summer, cut the stems with some of the foliage and they will keep neat.

The Petunia is another almost perfect plant for bedding only. You can have single or double, large or small flowered sorts, of almost all colors but yellow. I grow the variety *Rosy Morn*, a small, pink and white, single-flowered sort, but a dainty thing when in bloom. This is another slow grower and unless started under glass will not bloom until nearly August, but from then on until frost, is covered with flowers. It grows from one to two feet high according to variety.

Of the Poppies, the carnation flowered make a good cut flower. They grow three feet tall. The Shirleys come in the most delicate shades imaginable, from white to deep pink. They are beautiful while in blossom, but, alas, are so short-lived. They grow about two feet high.

Portulaca, or Sun Plant is indeed, all its name implies. Here is a little plant only six inches high. If given all sunshine, no matter how poor the ground will almost dazzle you with its blossoms. White, orange, red or magenta, it blooms from July until frost. Do not sow the seed too early.

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It loves heat. It grows very fast and as a rule reseeds itself.

The Resinus, the Caster-oil Plant gives you a mammoth, large leaved tropical appearing plant, four to five feet high. The variety *Zanzibarienis* seems to grow faster than any other sort.

The Salvia, although another slow grower, is a beautiful fall plant. It has long bright red spikes of flowers well above the foliage. It grows two to three feet high. The variety *Bonfire* is truly named, it is so intensely red. If wanted to bloom before August plants must be bought.

Scabiosa, *Mourning Bride*, is very pretty in white, pink, rose and maroon shades. Two and a half feet high, good for cutting, but should be grown in the vegetable plot as it does not make a very good showing in the border. It is sometimes called Pincushion Flower and the cushion-like flowers with their long white anthers do look like a cushion full of pins.

Butterfly, or Fringe Flower, grows about fifteen inches high. It makes a pretty little bush covered with airy, delicately colored flowers for all the world like flying butterflies but blooms only a week or so and then looks shabby.

The Sweet Peas are really a vine, but are grown for cut flowers. The colors and sizes of the flowers are wonderful and if picked regularly and if mulched when hot weather comes will bloom a very long time.

The last on my list is the Zinnia, another almost perfect flower. A little coarse, I'll admit, but grows anywhere except in all shade. It will bloom till frost and always looks neat. There are dwarf ones a foot high and mammoth ones three to four feet tall. Do not, whatever you do, mix the colors. They clash! You can get white, yellow, orange, pink, magenta, and a beautiful bright red. The blooms sometimes measure five inches across. They grow very fast from seed sown in the open.

This concludes the list of all the annuals I have tried up to this season. I know it is far from being complete, as to possibilities, but as I try out two or three new ones each year, if I live long enough I shall some day be able to say that I have grown all annuals listed. After that I shall grow all the different colors of each kind.

My Wild Flower Border

BY ANNA C. WIENECKE (Western New York)

THIS has been so interesting to plan and plant that I am going to pass on the idea to others interested. I selected plants that need no fussing over or extra care, and that can stand sunshine. For early Spring I have a long row of the delightful Mertensia Virginicas, Erythroniums from California, and large pure white Violets which I shall set later. To follow these are varieties of Pentstemon, in rose, lavender, purplish, red and white. The red (Barbatus *Torreyi*) being tall, is next to the fence. Humming Birds will like them better there anyway. There will also be Black-eyed Susan Daisies, Closed Gentians, Turtleheads (Chelone Glabra), Cardinal Flowers, Great Lobelias, (L. Syphilitica) Liatris Pycnostachya, L. Graminifolia, and a few other things if they prove hardy. Climbing the wire fence will be "lots" of Apios Tuberosa and several climbing Roses, though the latter are not wild. I think I have provided for a fair continuation of bloom.

I DON'T believe in digging up any Wild Flower unless one knows how to grow it and above all, has a suitable place for it. Gentiana Andrewsii is extinct in some parts of the state, and the only colony I ever saw around here is where cows trample all over it. It certainly has done well in my garden, with larger flowers and stems nearly thirty-six inches high. The tallest I saw in the original colony were about two feet, and from there they ranged down to eight inches. I believe I was right in moving as many as I did into my garden. Chelone Glabra and the Lobelias do better for me also than in the wild state, though they need plenty of water in hot weather. Black-eyed Susan is the best hardy yellow I have, and it needs no attention at all. It will keep nearly two weeks as a cut flower if properly handled. The early spring flowers need moist spring weather and then when blooming time is over, I leave them alone. Many of these Wild Flowers will self sow, especially the Lobelias and Black-eyed Susan. Seedlings of one's own are easier to transplant.

Some of these wildings seem to belong together, such as Chelones and Gentians, with the Cardinal Flower or Liatris added. Chelones and both Lobelias or Chelones and Liatris are good combinations in bouquets. The Pentstemons make airy graceful bouquets, especially when combined with Heucheras. Speaking of combinations—Turk's Cap Lily (L. Superbum) which is such a hard color to blend well, will go beautifully with deep blues like Delphinium or Veronica. Try Black-eyed Susans in a deep blue or black vase.

MANY wild flowers can be bought or raised from seed. The following do not succeed for me—Hepaticas, certain Violets, Betony, the Orchid family, swamp plants or things needing special soils or conditions. It seems cruel to me to take up a plant, knowing that it can't live in your garden, especially if the variety is becoming rare. I bought Apios Tuberosa, dozens of them, also dozens of Mertensias and a few of a new hybrid Liatris. The rest in the border I dug up wild, received in exchange, or raised from seed or cuttings. I made the border about fifty feet long and about two feet wide, setting the plants near enough together to shade each other roots. When they crowd I shall take up some and lengthen the border.

Seedlings vary to some degree. I have had Black-eyed Susans from an inch to nearly five inches across, some even semi-double. I pull up the poor types of Susans and allow only the best to scatter seed. Among wild Chelones (Turtlehead) one finds from pure white to pink. I haven't had Chelones long enough to raise seedlings. Among Lobelias are some ragged straggly spikes and others closely set, bright colors or dim, sturdy or weak plants. I select the best to set seed. One interesting thing I found is a striped blue-and-white Violet with variegated yellow-and-green leaves. I thought at first it was diseased. It scorches in the hot sun so I have it in the Bird Corner. My large pure white Violet is a hybrid between two species. These are a few things which make a garden interesting. Sometimes I pick off what ripened seed I don't want and scatter it where it will be apt to grow. It is fun to go back later and perhaps find a new colony started.

Aspirin for Wilted Cut Flowers

In the February FLOWER GROWER I read with great interest an article relative to the effect of Aspirin on wilted flowers.

My wife had some Tulips used as a decoration for a luncheon today, bought them yesterday from a local florist. Tonight they were sadly wilted, the stems very soft and flowers about done for. She was commenting on the fact of their wilting so soon when I recalled the article on Aspirin.

We cut the ends off the stems, placed them in a jar of fresh water into which we put a five grain tablet of Bayers Aspirin. At 9:30, or about three hours after they were put into the water, they were as fresh as ever —standing erect—not only the flowers but leaves as well.

Shall try it further and especially on Dahlias this year.

CHARLES G. SMITH

Several articles are in hand for future issues on the subject of reviving cut flowers and on the requirements of cut flowers for greatest longevity.

The American Gladiolus Society

CUTTING PRICES

The Secretary's Office is in receipt of several communications from growers of "Glads" regarding the indiscriminate cutting of prices on the newer varieties of "Glads" and these letters are particularly bitter on account of these low prices being published in different magazines in place of confining them to private price lists. Some of my correspondents going so far as to think it the fault of the publishers to allow such ads to appear in their magazines, which is all wrong.

Did you ever buy a copy of the little magazine called *Puck?* Did you ever study the little figure of "Cupid" looking down serenely on the cartoon or frontispiece that the artist has drawn and reflect on his words printed beneath the figure, "What Fools These Mortals Be"? There is nothing that I could write or say that could more forcibly express or illustrate my remarks on the subject of price cutting than the above slogan of little "Cupid," "What Fools These Mortals Be." There may be several excuses for this practice, such as a surplus of stock or over-production with the larger grower, the amateur or small grower has more of certain varieties than he has room to grow. Another reason may be the change of location, selling out the home and garden or various other reasons and last but not least the question of supply and demand and on this latter question is just where my theories are based. I will vow that there is no excuse plausible enough to cause the belief that such a practice is warranted on many of the new varieties that are offered. Any large grower would pay more than the retail price at which they are being offered if properly approached.

Why is this practice even contemplated? Why do some growers come out and openly advertise a price on a variety that is so far below its value? Why do they not strive to get some compensation for this variety or varieties that has cost them a lot of money and is still held at a high price on account of its scarcity? Do they realize what consternation and demoralization they are causing other growers of these same varieties who want to get reimbursement for the money they have expended in obtaining their stock and the labor they have put on it? Do they stop to consider what their own personal losses are, if not in actual money, then in *lost opportunity?* If they have not considered all these things then, I can only say that they should be cartooned in *Puck* and have little "Cupid" say to them: "What Fools These Mortals Be." Don't blame this practice, or even the spread of it, on the publisher of a magazine. He is very much a public servant and many times is called on to do things which he knows are unjust but must do them because his business and clients demand it and it is his business, and if he did not publish these ads which are legitimate business, some other publisher, less scrupulous, would gladly do so.

Let those who are ignorant of values of certain new and special varieties of "Glads" consult those from whom they purchased their stock and who will always advise them as to what the right wholesale or retail prices should be and then advertise and sell them at these figures. Thus, they will make a fair remuneration for their labor and their neighbor will profit with them and not be called on to suffer losses on account of their indiscretion. You: price cutters, change your tactics. Do unto your fellow man, that which is fair and right, give good value for a fair price. Do not rob yourself or your fellow man. Remember that there is a law of retribution which stretches throughout the world and from the responsibilities of which no man can escape.

JOHN C. DAVIS, Sec'y

On Sunday Jan. 20th, our President, Dr. F. E. Bennett, of St. Thomas, Ont., visited with me and I took him to see our friend, John Dunbar, who is quite seriously ill at his home.

Many of you know Mr. Dunbar, many more of you have heard of him and the wonderful work he has done in horticulture and floriculture. The beautiful parks of our city bear witness to his towering genius, great skill, tireless energy and devotion to his hobby and profession.

It would, indeed, be difficult to find a man better posted or more learned on the hundreds of varieties of Lilacs, Azaleas, Rhododendrons, Roses, Peonies, and all kinds of ornamental and flowering shrubs. In fact, he has a large collection of "Glads" growing in Highland Park in the Summer, of which he is justly proud. May his health be speedily restored to him and his useful life prolonged to him is the earnest wish of every resident of this city.

Are you a Radio Fan? If so, mark down this date:

On March 10th, tune into WHAM which is the Broadcasting station of the Eastman Theatre, this city, for, about 8 o'clock on that evening, standard time, I am going to tell the world about "Glads." I shall tell the beautiful story of the Gladiolus Corm suggested to me by Mr. Hinkle, Past President and Chairman of our Executive Committee, to which I will add that which has been found out about the planting, growing, cultivation, cutting of flowers, digging the bulbs and the cleaning, grading and care of them through the Winter. Perhaps some of it will not be new to you but I shall try to make it so interesting that those of you who hear my voice will not want to tune out until I have finished.

I know my story, I know it well and love to tell it. You may depend on that which I say as being truthful and right. This beautiful story will be heard by hundreds of thousands of people and should boost the growing of "Glads."

'Tis now about mid-season between harvesting your bulbs and the new planting. Have you looked at yours to see how they are keeping? If sprouting, which they are apt to do, loosen them up, turn them over and put in a cooler place if you have one—no, not where they will freeze. Mix some sand with the cormels so that they will not harden too much.

Give them a little attention and your efforts will be rewarded at blooming time next Summer.

Last month, I told you that in the March issue I would tell you how the membership campaign which I requested you to help me in came out. In the October issue of THE FLOWER GROWER, I wrote about starting the campaign for new members urging you to assist me. Many of you did so, some of you sending in the applications for six new members and to those who have exceeded their quota I doff my hat and say "thank you."

At the close of January, or, four months' time from starting, our membership has increased 462 and applications are coming in every day. I set out to obtain at least one thousand new members in 1924 and expect to attain this goal with your help.

Your secretary is working hard for you, working to make a success of the American Gladiolus Society and if you will all help a little our combined efforts will make things hump.

THE FLOWER GROWER costs $1.50 per year, but by joining the A. G. S. you get your membership for one year and one year's subscription to THE FLOWER GROWER for $2.00. Let's Go.

JOHN C. DAVIS, Sec'y

NOTES FROM DR. BALES

We are indebted to J. C. Vaughan for the following interesting bit of Gladiolus history regarding the variety *Mrs. Francis King*:—

"It will be remembered that Mr. Coblentz disposed of this as a numbered seedling at the liberal and unusual price at that time of one thousand dollars to Vaughan's Seed Store, of Chicago and New York. Mr. Cropp, treasurer of this Company (the introducers) gave it the name of Mrs. King with her consent, she being a liberal patron in all horticulture lines."

Knowing that our members are always glad to know of the personal history of other members, we wish to add the name of A. B. de Groat to our "Who's Who." In a recent letter, he writes, "Photography has been my main business for thirty-four years, having been in this one studio for that time, in fact, photography was the cause of my branching out in growing "Glads," having some sixteen or eighteen years ago been called to photograph an exhibit of "Glads," at a flower show, and being so impressed with their beauty that I was

immediately struck with the "bug." Shortly after I commenced to grow a few and from that to many until I had many thousands. The war came on and the help at the farm was drafted, and after one or two years I closed down on the more common varieties and have since featured the French varieties."

Relative to bulb increase by the cutting of bulbs, we wish to submit the following "evidence" from the experience of F. C. Hornberger:—

I have read with considerable interest your article in THE FLOWER GROWER relative to cutting bulbs to get increase, and I am pleased to state that I agree with your conclusions.

For a number of years I have made tests with a large number of varieties, and find that results attained depend largely with the particular varieties used, also the growing conditions at time of planting; if favorable, most varieties will give more increase cut than uncut. A very old corm of low vitality, or one which has not been properly grown or handled the previous year, will likely prove disappointing. We are assuming the bulbs to be "full of pep" as some of our advertisers state their bulbs to be.

I do not agree with Mr. Tracy about getting the increase in clustered form. Late in Spring when bulbs in storage are thinking about growing you will observe that some varieties have a tendency to sprout very early, while other varieties will show no indications under the same storage conditions.

Some varieties have the tendency of putting out one strong sprout, still others will show four to six sprouts from top and sides, all about equal in length, while still others will look as if they never intended to grow.

Let us consider the variety that has the tendency of producing one strong sprout; first, when planted, this often makes rapid growth at the expense of the other eyes, where if they had been cut and planted, the plant food and moisture stored in the bulb would have permitted each dormant sprout more chance of success when ready to grow.

Next the variety that shows all sprouts growing before ready to plant, if cut and planted separately will receive the same benefits as above, as well as the fact that each plant will receive more food and moisture from the earth, growing separately than growing in a large cluster; note the potato, Dahlia or any other kind of plant. I do not contend that this is advisable with ordinary stock on acount of labor and time consumed in making proper cuts, but believe it will greatly assist when used to get extra increase from limited stock.

I do not believe that the bulb with several eyes is past the age of bulblet production. This again is largely a matter of variety and vitality of stock.

You can take second year bulbs of *White Giant* and perhaps get hardly any increase of bulblets while *Panama* bulbs of same age and size will be loaded with bulblets. At least this has been my experience in growing many varieties of Gladioli, and making systematic trials.

The bulblet producing qualities depend largely on vitality. Vitality in Gladioli like in all plant or animal life may be increased or decreased, depending on methods of production, etc. I believe this is so well understood by all who claim any scientific knowledge of plant or animal life as to need no extra comments.

No doubt, our members would be interested to know a little of the history of our new Secretary, John C. Davis. He is the inventor of a number of improvements in modern plumbing devices and is the inventor of the first foot bicycle pump, manufactured this article for a number of years and saw the price of $3.50 for a brass barreled pump, fall to 12½ cents for a tin barreled one. He is the proprietor of a leather specialty manufacturing company which makes leather pocket books, memorandums, etc., the proprietor of the Art-Crafters, large printers of artistic job printing, and in addition to being Secretary of our Society, is Secretary of the Rochester Florists' Association. He is a living example of the axiom that to have anything done well, one must find a busy man to do it.

At a recent meeting of the Executive Committee, a committee was appointed to formulate a Symposium of the Gladiolus. This is in line with the work being done by the Iris, Peony and other societies.

The committee is composed of the following:—B. R. Bales, M. D., chairman, Circleville, Ohio; Wm. E. Clark, Boston, Mass.; Mrs. A. H. Austin, Ravenna, Ohio; Prof. A. H. Tomlinson, Guelph, Ont.; C. R. Hinkle. St. Joseph, Mich. It is the earnest desire of the committee that our members fill out the voting lists as soon as possible after their receipt and mail them to the chairman, so that the work of tabulating may be under way at once. A voting sheet will be mailed each member in a very short time.

We have heard of another "goat getter." Ex-President Hinkle says that it "gets his goat" if some one introduces him as "Mr. Hinkle, the Gladiolus King." Be prepared to run if you call him "King Hinkle."

It is a fact to be deplored that the trial grounds for Gladioli at Minneapolis, Minn., must be discontinued owing to the death of Prof. Leroy Cady who had charge of these gardens.

For the benefit of those members who are not acquainted with the new member of the Executive Committee, Floyd H. Stevens, of Lacona, N. Y., we would like to say that he is not a professional grower of Gladioli, though he grows a large number of the better varieties. He is extensively engaged in the milling business and is a breeder and fancier of thoroughbred Holstein cattle. He is a neighbor of the Editor of THE FLOWER GROWER and lives but a few miles from Calcium, N. Y.

The St. Thomas *Times-Journal*, of St. Thomas, Ont., in a lengthy report of the annual meeting of the St. Thomas Horticultural Society, says so many nice things of our President, Dr. Frank E. Bennett, that we cannot refrain from passing a few of them along to our members.

"It was with such feeling of civic pride that the members present launched the society on its eighteenth voyage and they ensured continued success and development for the organization by manning the seaworthy craft with virtually the same crew that guided it through 1923. For the fifteenth consecutive year, Dr. Frank E. Bennett was unanimously elected to the presidency. In fact, his return to the head of the board was an accepted fact and the re-election was a mere formality.

* * * * * *

"In being elevated to the presidency of the American Gladiolus Society last August, Dr. Bennett brought a signal honor to St. Thomas and himself, as he was the first Canadian ever to hold this position."

Dr. Bennett gave his illustrated lecture on flowers in thirty towns and cities last year and is "doing his bit" and more, in popularizing the growing of Gladioli.

While Dr. Bennett, Mrs. Austin and others are telling the public of the joys of "Glad" growing, Secretary Davis has adopted another method. On February 10, from Station WHAM, Eastman Broadcasting Station at Rochester, N. Y., he broadcasted a ten minute talk on Gladiolus growing. We believe this to be the first radio "Glad" talk.

From a questionnaire sent to more than six thousand florists regarding the forcing of Gladioli under glass, P. Vos and Son obtained a fund of very interesting information from which we quote in part:

The bugaboo of many florists forcing bulbs is called "blindness." The fact that blindness is caused by improper forcing conditions was definitely proved by the answers which the florists submitted.

Many forget that forcing conditions are unnatural. A bulb is "forced" to produce a flower out of season and under abnormal conditions.

The reasons for blindness could not be better defined than in the words of the florists themselves. The main reasons for blindness, according to the florists, are as follows, the order of importance being determined by the number of florists reporting each reason:

Bulbs planted too early;
Temperature too warm at start;
Bulbs were not first size;
Some varieties not suited;
Bulbs not rested enough;
Planted too close;
Improper watering;
Too shallow soil in raised beds;
Tried to force same bulbs twice.

Undoubtedly a portion of the troubles which are encountered are due to negligence on the part of the florists themselves in not properly caring for the bulbs after they receive them.

The bulbs should be unpacked as soon as received, placed in open trays and kept as dry as possible. If the bulbs are not unpacked they are likely to form roots, and this weakens their growth considerably. Several florists confessed on their questionnaires that they had discovered that poor storage care on their own part had cost them many bulbs.

Most Gladiolus bulbs grown in America for resale are harvested during the months of September and October. Therefore, to plant these bulbs during December is a mistake. It is physically impossible for the bulbs to have received sufficient "rest" in so short a time. And bulbs must have rest just the same as human beings. The proper time to plant is from January 15 to the end of February or the middle of March, depending upon the location—earlier in the south than in the north.

It must be borne in mind, when considering distances for planting, that some varieties produce heavier foliage than others and must be planted somewhat farther apart. *Glory of Kennemerland, Le Marechal Foch, Peace, Princeps* and *Schwaben* are varieties of this type. This heavy foliage must not be considered a disadvantage, as it indicates that the variety is a vigorous grower and, as such, is excellent for forcing.

Carnation conditions are ideal for growing Gladioli, soil, temperature and watering being considered. Gladioli planted either between Carnations or on the edges of the bed will bring good results.

Several florists inquire why some Gladioli grow with crooked stems. In many instances this is due to a particular variety, as crooked stems are a characteristic of some varieties. It must not be concluded, however, that all varieties with crooked stems are not to be desired. The opposite is often true, as with some varieties the arrangement of the flowers makes a crooked stem a positive merit and not a disadvantage. *Pink Perfection* is an example of such a variety.

When Gladioli are grown indoors, they have a tendency to grow tall. Unless they are staked or supported, they may fall over and are likely to produce crooked stems.

EARLIEST VARIETIES

Halley—Light geranium pink, almost salmon.
Maiden's Blush—Soft pink, mottled deeper.
Miss Christine Treur (Rose Pearl)—Pale pink, no blotch.
Prince of Wales—Strawberry pink.
Wilbrinck—Pale livid pink.

NEXT EARLY VARIETIES

Chicago White—White, blotched reddish purple.
General Joffre (improved War)—Blood-red.
Le Marechal Foch—Pale pink. Fine grower.
L'Immaculee—Waxy white.
Lilywhite—Pure white. Probably earliest white.
Miss Helen Franklin—Early white.
Wolverine—Light coral pink.
Yellow Prince—Capucine orange.

MIDSEASON VARIETIES

Evelyn Kirtland—Geranium pink.
Flora—Clear naphthalene yellow.
Glory of Kennemerland—True rose.
Mrs. Francis King—Jasper red.
Mrs. Frank Pendleton—Deep rose pink.
Pink Perfection—Alizarin pink.

LATE VARIETIES

Gretchen Zang—Vinaceous pink.
Peace—White, Tyrian rose blotch.
Schwaben—Marguerite yellow.

Don't forget the dates of the next annual meeting and exhibition of the A. G. S.—August 13 and 14. Start now to make plans to be there!

B. R. BALES, Chairman
Publicity Committee

A "Frost to Frost" Flower Garden for $5

BY MRS. E. W. BATTELLE (Washington)

A FEW years ago a friend who had just married and come into possession of a pretty bungalow home on a forty-foot lot, and who had often visited my garden of flowers, came to me and asked for some help in starting a small garden of her own. She had just $5.00 that she felt free to spend in that way, and wondered if anything could be done with such a small amount. After thinking the matter over I submitted to her a list of plants and seeds, which she bought and planted according to directions, and the results the following Spring and Summer were so very good that her garden was filled with first-class bloom. She and her husband prepared the beds with care, and gave the garden water and cultivation all season, and as that was the successful beginning of a small garden that has grown into one really artistic and beautiful, it may help others who are also starting in a small way. If the season had been Spring instead of Fall I should have suggested Gladioli instead of the Daffodils and other bulbs. Here is the list:

2 Rose bushes at $.75 each: 1 *General McArthur*, 1 *Mad. Caroline Testout*	$1.50
5 Perennial Plants from Nursery:	
1 Oriental Poppy	.20
1 *Polyanthus* Primrose	.20
1 Delphinium *Belladonna*	.20
1 Pink Perennial Phlox	.20
1 Early yellow Chrysanthemum	.20
Spring flowering bulbs as follows:	
1 dozen Crocus, mix.	.25
4 early Tulips *Kaiser Kroon*	.25
3 Daffodils *Golden Spur*	.25
5 Narcissi *Poeticus Ornatus*	.25
Flower seeds as follows:	
Pansies mixed	.10
Sweet Peas, early Spencers	.25
Giant Dahlias	.25
Cobea Scandens, for back porch	.10
Marguerite Carnations	.10
Pink Snapdragons	.10
Branching Asters mixed	.10
Giant Crego Asters mixed	.10
Mam. Early White Cosmos	.10
Giant Zinnias	.10
Giant Calendulas	.10
Sweet Alyssum, trailing	.10
	$5.00

THE Sweet Pea seed was planted in front of the house in the Fall; on each side of the front steps a Rose bush was planted. The varieties were chosen for profuse blooming, fragrance and good color, but two climbers could be substituted, if preferred. The Dahlia, Aster and Cobea seeds were planted early, in boxes, and later transplanted, as were the *Marguerite* Carnations. The rest of the seeds were planted where they were to grow; there were tall showy plants such as the Dahlias, Zinnias, and Cosmos, and low growing ones for the front of beds, Alyssum and Pansies.

The following Fall, our young friend bought more spring bulbs, two more Rose bushes, and a few shrubs and permanent vines, and more perennials, and with the annuals that had self-seeded in the beds, and with some Gladioli, Lilies and other plants from my garden, the second year their place looked well established and the owners had become garden enthusiasts, from a very small beginning.

This list shows continuous bloom from the coming of the Crocus in March, to the last Rose, Chrysanthemum and Cosmos in the Fall.

Dahlia Society of Southern California

The Dahlia Society of Southern California held a banquet and annual election of officers at the Italian Village, Los Angeles, on January 10. Officers for 1924 are as follows: G. S. Archer, President; Frank Mulkey, Vice-President; Frank L. Miller, Secretary; Ethel Bagley, Treasurer. These officers, together with Alex Waldie, Charles E. Seaman and D. F. Reichert, compose the executive committee. Frank Mulkey was continued editor of the bulletin. Mr. Martindale, a well-known wild flower artist, had on display twenty-five pictures of new and standard varieties of Dahlias. These were very interesting as they were done from life in full size. They were done for Archer and Vavra Dahlia specialists. The Society has fixed the next annual show dates for Thursday, Friday and Saturday, September 25, 26, 27. The Society meets the second Thursday in the month at eight P. M., Room 807, Van Nuys Building. A cordial invitation is extended to all interested in the Dahlia to come and take part in these meetings.

E. H. CUSHMAN

Home of the late Dr. C. C. Miller, Marengo, Ill.

Those who have read the older issues of THE FLOWER GROWER and perhaps those who have read the old MODERN GLADIOLUS GROWER will remember occasional items from the pen of Dr. Miller. He was no less noted in bee culture than in growing flowers, and it will be seen from the above photograph that Gladioli were among Dr. Miller's favorites.

We are able to reproduce this photograph here through courtesy of *Gleanings in Bee Culture*, which publication used it as their front cover illustration in October 1923. They also quote one of Dr. Miller's famous sayings as follows:

> I count myself singularly blessed in having a home where all the members of the family are so united in their tastes and enjoyments. One of our chief earthly pleasures is the love of flowers. At our quiet country home we have room unlimited for producing summer Roses by the bushel, and the bay window of the sitting-room brightens the days of Winter with its bright colors and luxuriant green.
>
> C. C. MILLER

Queries and Answers Department

Questions and Answers Asked and Answered by Readers

Readers who can assist by giving general or special information will confer a favor on the inquirer, as well as the Editor. A brief statement of facts and definite information is desired.

QUESTIONS

MAKING CRINUMS BLOOM

I bought three Crinums last Spring. They put out leaves and kept growing with an occasional yellowing of a leaf, but they did not bloom. Can any of your readers offer suggestions as to treatment? MRS. C. L. L.

ORIGIN OF QUOTATION WANTED

One of my readers would like to know the author and origin of the lines

"Who loves a garden, still his Eden keeps."

This is a fine motto and is subject to very liberal and deep interpretation.

USE OF GARDEN PLANTING LINE

A reader wants information or an article in THE FLOWER GROWER on details of using a planting line in connection with various garden crops.

Can any of my readers help me out on this? I have used a line for a long time, but would prefer to have some one else tell their experience.—THE EDITOR

DETAILS WANTED FOR MAKING SPARROW TRAP AND MARTIN HOUSE

A subscriber wants to know where he can get details and plans for making a Sparrow trap and wants to know whether it is practicable to build these at home.

Then he also wants details for a small Martin house. Any information on either of the above subjects will surely be appreciated, not only by the inquirer but by others who are interested in birds.

LICE ON FERNS

We are having trouble with lice on Ferns and some of our customers are reporting the same trouble with Ferns from our greenhouse.

Can you advise as to the probable cause? Also would like to have you advise how to prevent the lice as well as how to exterminate them. H. J. C.

PRESERVING FLOWERS

A reader wants to know how to preserve the color and form of Gladioli and other cut flowers indefinitely. He has tried dipping in parawax which presumably is paraffin, but the experiment was not successful in preserving colors for any considerable time. Can any of our readers give suggestions along this line?

BROWN SPOTS ON JACOBINIA

Will someone please tell me through the columns of THE FLOWER GROWER the cause of brown spots on the foliage of my Jacobinia? It is potted in a common garden soil and is growing in a south window of my living room. I keep a pail of water on the back of my stove to supply moisture to the air. Is this a strictly greenhouse plant?

IDA A. TROTTER

LIST OF AQUATIC PLANTS WANTED

Would like a list of plants to use around the edge of a pool to conceal the edge. Will the Caladium stand wet feet? Will the Siberian Iris stand wet feet? What plants will? Any information along this line will be thankfully received. E. S.

ANSWERS

SEED OF YELLOW HOLLYHOCKS

Tell "Mrs. J. A. S.," page 445, who writes about yellow Hollyhocks that they multiply from seed and that she can get the seed of the yellow varieties of almost any reliable seed house or the plants from me, if she will send address for catalogue.

W. W. WILMORE

SUCCESS WITH SNAPDRAGONS

If Snapdragons have good rich earth, and do not suffer for want of water, or cultivation, they should grow and bloom well. They grow readily from seeds, and from cuttings. Those from cuttings will give blooms earlier, and if well grown will bloom well all Winter here in California, if not allowed to seed.

MRS. SARAH A. PLEAS

DAHLIAS AS CUT FLOWERS

Cut the blooms before sunrise or after sundown, stems as long as possible. Get a kettle of water to a boiling point, dip the stems about three inches deep in this boiling water for about three minutes, and then quickly in cold water. Be careful not to let the steam get over the rest of the flower and stem, holding sidewise in kettle.

Dahlia blooms, treated as above will last from three to five days. Blooms for shows I always treat in this way with good results.

BEN BENTELE

GROWING AZALEAS

I have seen good results growing Azaleas under various conditions, and for the varieties the nurserymen catalogue. For planting out as shrubbery, would suggest planting in a rather light soil, mixing the soil with leaf mold or rotten vegetable matter, (humus), and covering on top after planted. A mulch or layering of leaves, or manure, to keep the root from drying out, in very dry weather, also to protect the flower buds during early Spring, if located where there is danger from very heavy freezing weather, is desirable at this time. If planted amongst other shrubs, where they will be partially shaded, so much the better.

THOMAS COLL

SOWING PANSY SEEDS

Sow seed in early September and encourage growth at all times, until true leaves show. Lift and transplant at least once, (or better twice), first one inch apart in good rich soil. Give a sunny location, and keep growing plants shaded after moving until a new start is noticed. Or if preferred plants may be sown in a sheltered place, and seed bed be kept nice and moist until plants get a good start, then transplanted, two or three inches apart, in a sunny warm spot in good loose rich soil, or a cold frame, covering with glass cloth on cold days, and keeping covered on all nights during the winter season. Let air circulate through the plants in warm spells, but don't let a cold draught blow directly on them. The idea is keep them growing right along and the first spring days will start the Pansies blooming.

THOMAS COLL

ROSES FOR SEPTEMBER BLOOM

In the September number of THE FLOWER GROWER a request was made for a list of Roses that would bloom in September. I have now, (Sept. 24) in bloom or bud as follows:

Mrs. Aaron Ward
Perle des Jardins
Rena Robbins
Hermosa
Mme. Caroline Testout
Killarney
Burbank
Paul Neyron
Magna Charta
Clotilde Soupert
Gen. McArthur
Gen. Jacqueminot

MRS. C. D. MEAD,
(Northwestern Ohio)

WHITE FLY ON FUCHSIAS

If "Mrs. L. A. C." will take the trouble to spray her Fuchsias with Black Leaf Forty, taking pains to get it on the underside of the leaves, she will have no more trouble. Use this poison according to directions on the bottle. It comes in many sizes and is one of the indispensables for any flower grower. If this is too much trouble, let her enjoy her Fuchsias by proxy in her neighbor's yard. Fuchsias are very prone to drop their leaves and buds if chilled, and some little care must be taken not to set them in the open too soon, or the cold nights will destroy the first crop of buds before she knows what ails her plants.

J. E. ERDMANN

GROWING AZALEAS

Azaleas want an acid soil, partial shade and are benefited by an annual top dressing of leaves. Don't use manure or commercial fertilizer on them, and never, NEVER apply lime or ground limestone to them. Grow them in a mixed border where the other shrubs will give them some shade. Here on the North Pacific Coast they grow like proverbial weeds but there are many parts of the United States where they are tender subjects. If one can get some woods dirt to plant them in or some rotted sods, and can put some old leaves around them every Fall, one stands a good show of having them grow. The evergreen kinds grow to perfection in a north or eastern exposure.

J. E. ERDMANN

A Partridge Risks Her Life

(Continued from page 85)

is always wise to fly hard whenever this smell is perceived on the wind or about trees and stumps, and to her amazement, the odor was about her baby, but the wind was blowing briskly that afternoon, and soon blew away the dreadful odor. Later, when the little lonely fellow crept up to his mother, the smell had gone, and she almost pushed him under her wings, so happy was she. She couldn't understand; neither did he.